

THE EDICT OF WILLIAM THE TESTY



William the Testy, second governor of New Amsterdam, issued an edict prohibiting smoking, which provoked warm indignation, and an army of insurgents, well supplied with pipes, tobacco and determination, seated themselves before the governor's house and began to smoke. Governor Kieft came forth in a fury and asked what they meant by this "outrageous fumigation." They did not reply, but puffed and puffed in stolid silence. It is related that the governor came to terms.

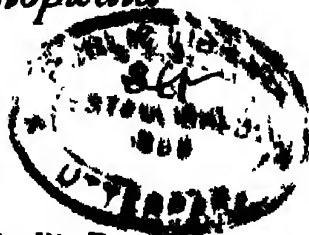
The Book of Knowledge

The Children's Encyclopædia

EDITORS-IN-CHIEF

ARTHUR MEE

Temple Chambers, London



HOLLAND THOMPSON, Ph. D.

The College of the City of New York

WITH AN INTRODUCTION BY

JOHN H. FINLEY, LL. D.

Late President of the College of the City of New York

Commissioner of Education of the State of New York

DEPARTMENTAL EDITORS

All Countries

M. Alston Buckley

Men and Women

Ernest A. Bryant

The United States

Holland Thompson, Ph. D.

Natural History

Ernest Ingersoll

Our Own Life

C. W. Saleeby, M. D.

The Earth

Ivin Sickness, M. S., M. D.

Plant Life

Edward Step

Famous Books

J. A. Hammerton

Golden Deeds

M. Perry Mills

Book of Wonder

Arthur Mee

School Lessons

A. M. Skinner, B. S.

Stories and Legends

Edward Wright

Familiar Things

Harold Begbie

Poetry and Rhymes

A. Von Hartmann

Things to Make and Do

E. R. Sayre, B. A.

Dominion of Canada

W. Peterson, D. Litt., LL. D.

VOLUMES XXIII AND XXIV

London: THE EDUCATIONAL BOOK CO.

THE STANDARD LITERATURE COMPANY
CALCUTTA

**Text and Illustrations in this work are protected
by copyright as follows :**

Copyright, 1911, 1912, 1918, 1919, 1921, 1923, by THE GROLIER
SOCIETY

Copyright, 1911, 1918, 1921, by THE EDUCATIONAL BOOK Co.

Copyright, 1910, 1911, 1912, 1918, 1919, 1921, 1922, by M. PERRY
MILLS

Copyright, 1908, by AMALGAMATED PRESS, LTD.

Copyright, 1868, 1870, 1872, 1874, 1875, 1876, 1878, 1881, 1883,
1884, 1886, 1887, 1888, 1889, 1890, 1891, 1902, 1906, by
TICKNOR & FIELDS, JAMES R. OSGOOD & Co., and
HOUGHTON, MIFFLIN & Co.

Copyright, 1874, 1880, 1892, 1894, 1895, 1896, 1904, 1908, by
CHARLES SCRIBNER'S SONS

Copyright, 1908, 1909, by THE CENTURY Co.

Copyright, 1897, by HARPER & BROS.

Copyright, 1906, by THE BAKER & TAYLOR Co.

Copyright, 1901, 1902, 1906, 1907, 1909, by H. C. WHITE Co.

Copyright, 1897, 1907, by THE AMERICAN BOOK Co.

Copyright, 1890, 1899, by JAMES WHITCOMB RILEY

Copyright by PHOTOGRAPHISCHE GESELLSCHAFT

Copyright by KEYSTONE VIEW Co.

Copyright by UNDERWOOD & UNDERWOOD

Copyright by BROWN BROS.

Copyright by BROWN & DAWSON

Copyright by B. L. SINGLEY

The poems by Thomas Bailey Aldrich, Phoebe Cary, Ralph Waldo Emerson, Oliver Wendell Holmes, James Russell Lowell, John Greenleaf Whittier, Henry Wadsworth Longfellow, Edmund Clarence Stedman, Richard Watson Gilder, John Hay, Edward R. Sill, Bayard Taylor and Celia Thaxter included in this work are reprinted by permission of, and by special arrangement with, Houghton Mifflin Company, the authorized publishers of the Works of these authors. The poems by Robert Louis Stevenson, Eugene Field, Mary Mapes Dodge, Richard Henry Stoddard and Henry Van Dyke included in this work are printed by permission of Charles Scribner's Sons.

CONTENTS OF THIS VOLUME

This is a short guide only to the principal contents of this volume. It is not possible to give the titles of all the Poems and Rhymes, Legends, Problems, color pages, questions in the Wonder Book, and many other things that come into the volume; but in all cases the pages where these parts of our book begin are given. The full list of these things comes into the big index to the whole work.

THE BOOK OF THE UNITED STATES

Glimpses of the Southern States . . .	5957
The Mississippi . . .	6071
Boy Scouts of America . . .	6135
The Lost Colony of Roanoke . . .	6271
The School Republic . . .	6387

THE BOOK OF FAMILIAR THINGS

The Story in a Teacup . . .	5971
How Word-waves Travel . . .	5988
Traveling Long Ago . . .	6051
Seeing What Is Not There . . .	6076
America's Most Valuable Plant . . .	6090
What a Big Gun Can Do . . .	6147
How Elevators Go Up and Down . . .	6197
Ships and Sailors of Our Navy . . .	6203
Boring Through the Alps . . .	6259
A Monster Ship of the Skies . . .	6276
The Deserted Palace of Peace at The Hague . . .	6298
Down in the Deep, Deep Sea . . .	6311
How a Lock is Made . . .	6357
How a New Power Dawned Upon the World . . .	6370
The Precious Stones . . .	6377
The Wonder of Radio . . .	6391

THE BOOK OF WONDER

Why Do the Winds Blow? . . .	5989
What are the Trade Winds? . . .	5990
What is a Whirlwind? . . .	5990
What is a Hurricane? . . .	5990
Is Impure Air Lighter than Pure Air? . . .	5991
Why Does Yeast Make Bread Rise and Biscuits Bubble? . . .	5991
What is the Difference Between a Fruit and a Vegetable? . . .	5992
What Makes People Faint? . . .	5993
Do Our Eyes Magnify? . . .	5995
What Are Sun-spots? . . .	5995
Why Does Elastic Stretch? . . .	5995
Who is the Man in the Moon? . . .	6215
How Does a Gyroscope Work? . . .	6216
Which is the Bird with the Longest Tail? . . .	6217
Where Were the First Lighthouses Built? . . .	6218
Why is a Lighthouse Called a "Pharos"? . . .	6219

PAGE

THE BOOK OF NATURE

Unknown Animals . . .	6071
The Story of the Horse . . .	6081
The Hunters of the Wild . . .	6081
The Story of Your Dog . . .	6119
The Winter Sleep of Animals . . .	6271

THE BOOK OF CANADA

The Mineral Resources of Canada . . .	6091
The Great Lakes and the St. Lawrence . . .	6119
The Dominion of Newfoundland . . .	6393
The Spirit of Canada . . .	6345

THE BOOK OF MEN AND WOMEN

English Poets Since Milton . . .	6039
A Priest Who Loved the Indians . . .	6111
John Eliot, the Apostle to the Indians . . .	6114
Makers of Beautiful Things . . .	6171
Two American Pioneers . . .	6249
A Modern Wizard . . .	6349
Scientists Who Have Saved Lives . . .	6363

THE BOOK OF OUR OWN LIFE

The Kitchen of Jack's House . . .	6013
Jack's Wonderful Pump . . .	6107
Jack's Fresh Air Supply . . .	6231
The Wonderful River of Air . . .	6307
Jack's Wireless Telephone . . .	6353

THE BOOK OF GOLDEN DEEDS

Black Robe and White Heart . . .	6143
----------------------------------	------

THE STORY OF FAMOUS BOOKS

An Egyptian Princess . . .	
Two Years Before the Mast . . .	

THE BOOK OF STORIES

The First Men in England . . .	6017
The First Boy in London . . .	6019
The Tale of a Slave . . .	6022
The Farmer and the Raven . . .	
The Son Who Returned Home . . .	
The Stone that Gathered no Moss . . .	
How the Children Saved the Bears . . .	
Tales Told in a Minute . . .	
Stories Told in Chinese School-books . . .	
The Little Spinner at the Window . . .	
The Tale of Jenny Martin . . .	
Eyes Front . . .	
When Betty Lost Her Way . . .	

Stories Told in India 3,000 Years Ago	6133
The Peasant and the Three Robbers	6134
The Unknown Hero	6191
The Fight with the Dragon	6192
The Song that Found a King	6193
The King's Three Questions	6196
The Stone in the Road	6283
The Wonderful Friends	6284
The Grey Terror	6287
Why the Swallow Builds on the Wall	6270
The Robber and the Monk	6291
The Man Who Broke the News	6291
The Pair of New Boots	6291
Stories Told in India 3,000 Years Ago	6292
The First Apple Dumpling	6339
The First Home, Sweet Home	6340
When the Fire Went Out	6342
How They Got a Holiday	6344

THE BOOK OF POETRY

A Court Lady	5981
The Lost Leader	5982
The Circle	5982
Alas! How Light a Cause May Move	5982
Love, Death and Reputation	5983
Sonnet	5983
Memories	5983
To Thomas Moore	5983
Selections from "In Memoriam"	5983
Love Serviceable	5983
The Threshold	5983
The Author's Resolution in a Sonnet	5984
Orsames' Song	5984
To Lucasta, On Going to the Wars	5984
Night	5984
On His Blindness	5985
The Reconciliation	5985
Old Friends	5985
Believe Me, If All Those Endearing	
Young Charms	5985
The Night Has a Thousand Eyes	5985
From "In Memoriam"	5985
Winter	5985
Darwin Green and His Flying Machine	6085
Four Ducks on a Pond	6087
Give Us Men	6087
The Douglas Tragedy	6088
La Belle Dame Sans Merci	6088
Ode to the West Wind	6089
The Bard	6209
O Wert Thou in the Cauld Blast	6300
The Bell of Atri	6301
The Miller of the Dee	6302
I Saw a New World	6302
The Wild Rose	6303
The Moss Rose	6303
The Pretty Fisher Maiden	6303
Whither?	6303
To My Sister	6303
The Castle by the Sea	6304
Rest	6304
The Evil King	6304
Little Verses	5986, 6305

THE BOOK OF ALL COUNTRIES

The Islands of the West Indies	6041
The Peoples of the Desert	6097
The Great Sights of Egypt	6179
What I Saw at Pompeii	6221
The Scattered Nation	6329

THINGS TO MAKE AND TO DO

A Garden Merry-Go-Round	6003
Three Things for Clay Modeling	6004
Measuring a Tower with a Looking-Glass	6005
Putting a Name on a Handkerchief	6006
How to Look at What You Draw	6007
An Easy-Made Shelter	6009
How to Measure the Diameter of a Ball	6009
A Garden Grown on a Wall	6010
A Puzzle Picture	6012
How to Arrange a Paper Chase	6077
Games to Play in the Train	6078
How to Make a Bag from a Pair of Gloves	6079
Little Gardens for Invalids	6080
The Story of Roy and His Bedroom Garden	6080
A New Ball Game for the Open Air	6081
How to Know if a Ruler is Straight	6081
A Kaleidoscope that a Boy Can Make	6082
How to Measure a Stream	6083
Your Portrait on a Sheet of Note Paper	6083
Hints and Tricks for Odd Moments	6084
Drawing the Things We See	6161
A Game of Skill with Corks	6163
The Way to Sharpen a Lead Pencil	6163
Two Ways to Make a Garden Hammock	6164
A Work-basket that a Girl Can Make	6165
How to Walk in a Straight Line	6165
A Roll-up Case for Silks	6166
Modeling a Boat, Bell and Match stand	6167
A Word Game with Skittles	6168
A Candlestick from a Glass of Water	6168
Hints and Tricks for Odd Moments	6170
How to Play Football	6277
Making a Set of Bookshelves	6279
The Mysterious Chinese Bat	6280
How to Mark Your Name on Fruit	6281
Flashing Messages at Night	6281
A Simple Entertainment for a Party	6282

THE BOOK OF SCHOOL LESSONS

FRENCH

A Story-Dictionary in English and French	6011, 6170
--	------------

COLOR PLATES

The Edict of William the Test	Frontispiece
Cheftans of a Vanishing Race	6127
Dogs of Many Kinds, Shapes and Sizes	6318
Specimens of the Most Useful Breeds of Dogs	6326

The Story of FAMOUS BOOKS

A STORY OF EGYPT AND PERSIA

THIS story of Egypt when its power was declining, was written by Georg Ebers, a German professor of Egyptology. He made several expeditions to Egypt to study the remains of the past civilization, and made some important discoveries. One of them was the book which tells us most that we know about the medical knowledge of the Egyptians. Though he wrote several learned books, he took more pleasure in his stories. This is his first and most popular, but he wrote a half dozen others, describing Egyptian life in the long ago. This book was published in 1864, and was soon translated into several languages, and has been read in many lands. It is still popular.

AN EGYPTIAN PRINCESS

ABOUT six hundred years before the birth of Christ, the Greeks at last gained a port at the mouth of the Nile. The Egyptians hated strangers, and clung to the ways and religion of their forefathers; and they feared lest the coming of foreign nations among them should cause great changes in their customs. Nevertheless, the Greeks by their hardiness and clever trading succeeded in pushing their way even into this closed land, and were given the town of Naukratis by King Amasis, where they might live and trade and build temples to their gods.

King Amasis felt the attraction of this wonderful people. His wife, Ladice, was a Greek, and the captain of his mercenaries, Phanes by name, was an Athenian. But the Egyptian priests hated the foreigners, for they knew that if Greek learning ever became popular in the land of the Nile, their own great influence would be at an end. So they were ever on the watch to discover some offence against the law or ancient customs of the country. It happened that Phanes, the handsome and witty captain of the foreign legions, showed contempt for the sacred animals of the Egyptians by having some kittens drowned. He was sentenced to death, and with difficulty could King Amasis succeed in changing the sentence to banishment. Not only had Phanes offended all the priests, but he had also incurred the



hatred of Psamtik, the king's son, who swore that the Greek should not escape his vengeance.

On his way into exile the ex-captain stopped near Naukratis with Rhodopis, a very beautiful woman, whose house was the centre of the Greek colony in Egypt. Here he met many of his countrymen, learned the news from Greece, and obtained a promise from the mistress of the house that she would shelter his little boy and girl from the enmity of the prince while they were awaiting a ship to follow him to Thrace. Rhodopis was glad to do this for the courageous exile, and her granddaughter Sappho, a beautiful young girl who lived with her, welcomed the prospect of play-mates.

At this time there came to the court of Egypt an embassy from King Cambyses of Persia, seeking the hand of the king's daughter, Tachot, in marriage. Cambyses did not come to Egypt in person but sent his brother Bartja, a handsome young prince of twenty years, with an old king, Croesus of Lydia, with him as adviser and guide. Amasis entertained the Persians with great splendor and rejoicings, and even offered to send, instead of Tachot, Nitetis, his fairest daughter, for Egypt stood in need of peace. At a great feast to celebrate the betrothal, Bartja, the young Persian prince, and Nitetis, the Pharaoh's daughter, were conspicuous for their superior beauty,

grace and charm. The royal maiden wore a transparent rose-colored robe, in her black hair were fresh roses; she walked by the side of her sister, the two robed alike, but Nitetis pale as the lotus flower in her mother's hair.

"Be of good courage," said her mother, "and meet thy fortune bravely. Here is the noble Bartja, the brother of thy future husband."

Nitetis raised her dark, thoughtful eyes and fixed them long and inquiringly on the beautiful youth. He bowed low before the blushing maiden, kissed her garment and said:

"I salute thee, as my future queen and sister! I can believe that thy heart is sore at parting from thy home, thy parents, brethren and sisters; but be of good courage; thy husband is a great hero, and a powerful king; our mother is the noblest of women, and among the Persians the beauty and virtue of woman is as much revered as the life-giving light of the sun. Of thee, thou sister of the lily, Nitetis, whom, by her side, I might venture to call the rose, I beg forgiveness, for robbing thee of thy dearest friend."

As he said these words he looked eagerly into Tachot's beautiful blue eyes; she bent low, pressing her hand upon her heart, and after he had gone let her thoughts dwell lovingly upon the gallant prince.

One of the pleasures that the Persians enjoyed in their stay in the strange country was a visit to Rhodopis, near Naukratis. At her house they met and all talked with the exiled Phanes, who was waiting for a ship to bear him into Thrace, for he dared not outstay his time, knowing that Psamtik's jealous anger was seeking to do him harm. One night when some of the Greeks and older Persians were supping together, the younger strangers surprised an ambush that had been laid around the house to entrap Phanes, but by disguising himself the latter escaped from the land. He bore with him a secret very dangerous to the reigning house of Egypt, namely, that Nitetis in reality was no daughter of King Amasis, but the only child and heiress of King Hophra, whom Amasis had deposed. By fraud, therefore, Amasis was trying to make an alliance with Persia, and it was certain that the wrath of Cambyses, if the trick should be discovered, would be terrible indeed.

At the house of Rhodopis, also, Bartja saw the charming Sappho, and fell deeply in love with her. The change which the power of love made in his character, passed unnoticed by all but Tachot, the daughter of Amasis. From the first day on which they had spoken together she had loved him, and her quick feelings told her at once that something had happened to estrange him. In her distress she confided her sorrow to Nitetis, who bade her take courage, and the two built many a castle in the air, picturing to themselves the happiness of being always together at one court and married to two royal brothers. Nevertheless, Bartja's love for Sappho increased, and before leaving for Babylon, he obtained a promise from her grandmother that the girl should be his bride when he returned from Persia.

Three days later, a densely packed crowd surged round the landing-place. They had assembled to bid a last farewell to their king's daughter, and when at last the wind filled the sails of the royal boat and bore the princess, destined to be the great king's bride, from their sight, few eyes among that vast crowd remained dry.

Seven weeks after Nitetis had quitted her native country, a long train of equipages and horsemen was to be seen on the king's highway from the west to Babylon, moving steadily towards that gigantic city, whose towers might already be descried in the far distance. The highroad followed the course of the Euphrates, passing through luxuriant fields of wheat, barley and sesame. Slender date-palms covered with golden fruit were scattered in every direction over the fields, and although it was winter, the sun shone warm and bright from a cloudless sky.

At the last resting place on the journey, Nitetis descended and put on Persian dress, to appear well-pleasing in the eyes of Cambyses. The splendid silken garments of a Median princess, flashing with gold and jewels, set off her dark beauty and she seemed already clothed in the majesty of a queen, when a troop of two hundred horsemen on white horses appeared in full gallop before her. Their leader rode a powerful coal-black charger, and wore a vesture of scarlet and white, thickly embroidered with eagles and falcons in silver. The lower part of his dress was purple, and his boots of yellow

leather. He wore a golden girdle and in this hung a short dagger-like sword, the hilt and scabbard of which were thickly studded with jewels.

His hair and beard were black as ebony, and his features pale and immovable, but his eyes glowed with a fire that was scorching. Across his high forehead, arched nose and thin upper lip ran a deep, fiery-red scar, given by the sword of a wild enemy. His whole demeanor expressed power and unbounded pride. Bringing his unruly steed to a stand by the side of Nitetis' carriage, he gazed upon her, and waving his hand in token of welcome, rode to her escort, who had alighted from their horses and were awaiting him. He commanded Croesus, the aged king of Lydia, to ride with him at the side of the carriage as an interpreter between himself and Nitetis.

"She is beautiful and pleases me well," began the king. "Interpret faithfully all her answers, for I understand only the Persian, Assyrian and Indian tongues."

Nitetis caught and understood these words. A feeling of intense joy stole into her heart, and before Croesus could answer, she began softly in broken Persian, and blushing deeply:

"Blessed be the gods, who have caused me to find favor in thine eyes. I am not ignorant of the speech of my lord, for the noble Croesus has instructed me in the Persian language during our long journey. Forgive if my sentences be broken and imperfect; the time was short and my capacity only that of a poor and simple maiden."

Pleased at this sign of industry, for he was accustomed to see women grow up in idleness and ignorance, Cambyses greeted her kindly, and gave her for her dwelling a pleasant palace in the hanging gardens. There she could live apart from his other wives and under no rule save his own, and when she became familiar with the customs of Persia and the religion of his gods the law of the land would allow him to marry her.

And so began a quiet but happy life for Nitetis in her country home. Her only companions were Kassandane, the blind queen-mother, and Atossa, Cambyses' young sister. Every day she received instructions from Croesus, who talked to her about Egypt and her loved

ones, but always in Persian, and every second day the high priest was in attendance to teach her the Persian religion. She saw Cambyses only rarely, but he presented her continually with rich dresses and costly jewels, and her former fears of him changed into love and admiration.

The king had many other wives, but he no longer cared for them after he had seen Nitetis. For this they blamed the Egyptian princess, and would have rejoiced if evil had come to her. Boges, also, chief of the eunuchs, and keeper of the women, lost power because he had no rule over Nitetis, and he began a plot to ruin the blameless girl.

Now Bartja, the younger son of Cyrus the Great, was more beloved by the people than Cambyses the tyrant, and for this reason, his brother was sometimes jealous of him, and sent him to subdue a wild tribe upon the frontier after his return from Egypt, because he suspected that Nitetis loved him. Cambyses at last grew certain that he was loved by Nitetis, and when Bartja returned victorious from his war, greeted him warmly and bade him ask upon his birthday for any favor that he would have. The king's birthday was celebrated with great pomp throughout the land; sacrifices to the gods were offered early in the morning upon the banks of the Euphrates, and at noon Cambyses began a great feast to which the envoys from the conquered provinces were bidden.

The great throne-room presented a vision of dazzling and magic beauty. In the background, raised on six steps, each of which was guarded by two golden dogs, stood the throne of gold; above it, supported by four golden pillars studded with precious stones, was a purple canopy. The walls and ceiling of the entire hall were covered with plates of burnished gold, and the floor with purple carpets. Before the silver gates lay winged bulls, and the king's body-guard, their swords in golden scabbards and their lances ornamented with gold and silver apples, were stationed in the court of the palace.

That day, Nitetis for the first time took part in the general sacrifice made by the king's wives, and tried to pray to the new gods in the open air before the fire-altars and amid the sound of religious songs strange to her ears. The

gaze of the women around her, and the loud music, disturbed her, and her thoughts strayed back to the solemn stillness of the gigantic temples in her native land, where she had worshipped the gods of her childhood so earnestly at the side of her mother and sister. And then, too, she longed to get back to her room to read her first letter from Egypt, which had arrived that day.

At last the long ceremony was over, and Nitetis, ordering her litter, was carried back to her dwelling and hastened to the table where lay the scroll. Breaking the seal, she began to read in a happy mood, but her face soon grew serious and when she had finished the letter fell to the ground. Her eyes were dimmed with tears and her head, carried so proudly at a few minutes before, now lay in the jewels which covered the table. Amasis had been stricken with blindness, and Tachot—her loved Tachot—lay sick of a wasting fever which none could cure, for no one knew the cause thereof! Nitetis sat in her royal purple, weeping, forgetful of everything but her mother's grief, her father's misfortune and her sister's illness. Unnoticed, outside one of the windows, Boges, chief of the eunuchs, stood peering in and taking count that Cambyes's chosen bride was weeping on her lover's birthday.

At the royal banquet that night, Nitetis sat by the king in all the splendor and dignity of a queen, but looking very, very pale in her new purple robes; she was thinking of her young sister, Tachot, dying for love of Bartja. Cambyes had never felt so happy as on this day and his usual severity seemed to have changed into good-nature, as he turned to his brother Bartja with the words:

"Come, brother, have you forgotten my promise? Don't you know that to-day you are sure of gaining the dearest wish of your heart from me? Drain the goblet and take courage! But do not ask anything small, for I am in the mood to give largely to-day."

Bartja, whose cheeks were glowing from agitation, bent his head close to his brother's ear and whispered shortly the story of his love for Sappho. At the close of the whispered tale Cambyes embraced him kindly, and looking at the Egyptian, exclaimed:

"In a few days our brother Bartja will leave us for your country, Nitetis, and

will bring back another jewel from the shores of the Nile to our mountain home." And Nitetis, who knew nothing of his love for Sappho, believed that it was Tachot whom Bartja meant to fetch, and fainted for relieved joy and happiness. Cambyes sprang to her help, and when she had recovered consciousness went on:

"Bartja is going to your own country, my wife—to Naukratis on the Nile—to fetch thence the granddaughter of a certain Rhodopis and daughter of a noble warrior, as his wife." The blow to her new-sprung happiness was too cruel, and Nitetis let slip the cup which her royal lover had given her and it fell ringing on to the ground. Cambyes, all his former suspicions of his princess's love for Bartja suddenly revived, broke up the banquet in disorder and dismissed the women to their quarters, forbidding any, under pain of death, to approach the palace of the hanging gardens.

That night, Boges, chief of the eunuchs, arranged that a young man resembling Bartja should gain entrance to the palace, and have an interview with the waiting woman of Nitetis, whom he loved and never had a chance of seeing. Boges, at the appointed time, led Croesus, the high priest, and some of the king's kinsmen, into the gardens on the pretence of showing them a marvelous blue lily that had just blossomed. These all saw a man, who looked like Prince Bartja, leap out of Nitetis' window and escape behind the cypresses. When the news was brought to the king he ordered that his brother should be strangled on the morrow, and the guilty Nitetis set astride upon an ass and flogged through the streets of Babylon.

Since the banquet, Nitetis had been closely guarded in her lonely palace, and she knew nothing of the evil plot which was being twined around her life. When Boges, therefore, with evil glee read to her the awful sentence of execution, in utter ignorance as to how she could have so angered the king, she resolved to take poison when the hour approached.

Before the sun had reached his midday height the news of what had happened and of what was still to happen had filled all Babylon. The streets swarmed with people, waiting impatiently to see the strange spectacle which the punishment of one of the king's wives promised to

afford. At the gate, called the Bel Gate, which led to the great western highroad, the throng was thicker than at any other point, for it was said that through this door, the one by which she had entered Babylon, the Egyptian princess was to be led out of the city in shame and disgrace. It only wanted a few hours to the time fixed for the spectacle, when a caravan approached the city, driving at great speed. Crying out that he had come to save Bartja, the idol of the people, Phanes, for it was he, soon procured an escort to the royal presence. Cambyses was lying on his purple couch, pale as death. At first he would not hear the testimony that the Greek offered, but some mysterious influence that Phanes exercised over him caused him to listen.

Not far from the walls of Babylon, Phanes related, his caravan had heard cries of distress and come upon a fearful scene. Three wild-looking fellows had just pulled a youth from his horse, stunned him with heavy blows and were on the point of throwing him into the Euphrates. They fled as Phanes approached, and he with horror gazed down upon what he believed were the features of Bartja. In his delirium, however, the wounded man discovered his identity, and babbled of the hanging gardens and some lovers' meeting there with a woman called Mandane.

"Mandane, Mandane," said Cambyses in a low voice. "If I do not mistake, that is the name of the highest attendant on Amasis' daughter. Fetch Boges and Mandane." The eunuch was nowhere to be found. He had vanished from the hanging gardens in an unaccountable manner, but Mandane was brought to the king's presence, and weeping confessed that, helped by Boges, she had met her lover in the palace of the Egyptian princess. The news had come too late to avert a tragedy: upon the approach of the hour set for her shame, Nitetis had swallowed poison.

On the twelfth day after her death, Phanes, who had really come to Persia to secure vengeance upon Prince Psamtik because he had stolen his children from Rhodopis' keeping, asked for an audience with the king. He told Cambyses that Nitetis was the daughter of the deposed Hophra, and not of Amasis, and that Amasis had deceived him in the matter. By the law, Nitetis' right to the throne

of Egypt descended to her husband, and Cambyses was lawful monarch of the land of the Nile.

Glad of something to distract him from his grief, Cambyses welcomed the prospect of a campaign in Egypt, for the ancients believed that only by constantly occupying their people in war could their vigor and manliness be maintained. He called a council of war, and appeared at table in royal robes instead of his mourning garments. The Arabians were secured as allies, and preparations for war set on foot.

In the meantime, Tachot, Amasis' own daughter, died. Once, in a crowd, she had seen Bartja again, for he had come to Egypt for his marriage to Sappho. She was ignorant of this, and believing it was for her sake that he had come, died happily. An hour later, Amasis the king, borne down by the news of the Persian advance upon Egypt, and his dearly loved child's death, died also.

Psamtik succeeded him on the throne of the Pharaohs, and one month before the time of the flooding of the Nile, the Persian and Egyptian armies were standing face to face, near Pelusium, on the northeast coast of the Delta.

Just before the great hosts joined battle, Psamtik gave Phanes' child over to the Greek mercenaries, saying that her father had betrayed his countrymen and country. And the wild troops killed her cruelly and drank her blood in her father's sight, as the troops were not more than a bow-shot apart, and then rushed on to the battle. At noon, fortune seemed favoring the Egyptians, but at sunset the Persians had the advantage, and when the full moon rose, the Egyptians were flying wildly from the battlefield, perishing in the marshes and in the Nile, or being cut to pieces by the swords of their enemies. Twenty thousand Persians and fifty thousand Egyptians lay dead on the blood-stained sea-sand.

Psamtik fled to Memphis, but he was followed and captured by Cambyses, and later lost his life urging the priests to rebel against their conqueror. The Persian king became monarch of Egypt, but his victory did not remove the longing for Nitetis from his mind. He sank into melancholy and madness, and finally perished as he was hastening back to Babylon.

THE NEXT STORY OF FAMOUS BOOKS IS ON PAGE 6235.

THE CAPITOL SQUARE IN RICHMOND ON THE JAMES



The Capitol Square in Richmond, once seen will never be forgotten. The dilapidated capitol building on the right was planned by Thomas Jefferson, on the model of the Maison Carree at Mimes, France. During the Civil War the Confederate Congress met in this building. To the left is the City Hall. Several fine statues adorn the grounds, and in the Capitol itself is the only statue of Washington modeled from life. It is by the great French sculptor, Jean Antoine Houdon.

The Book of THE UNITED STATES



Broad Street, in Augusta, Georgia, a beautiful Southern city.

GLIMPSES OF THE SOUTHERN STATES

THE settlement and the early history of the Southern States of our country are told in the History of the United States, which also tells of the great war between the sections. This article will show something of the South to-day, which has changed much since the Civil War.

First, we must decide what we mean by the South. Eleven states seceded and formed the Confederate States of America. They were Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, Texas, Arkansas and Tennessee. Besides these, Maryland, Delaware, Kentucky and Missouri also held slaves and are sometimes called Southern States. West Virginia was made a state during the war, because few slaves were held in that part of Virginia, and the people did not wish to leave the Union. It is not really a Southern state. Oklahoma, one of the newest states, is sometimes called Southern and sometimes called Western.

These states are not all alike, for

the South is a large section. Even different parts of the same state may be very much unlike in surface and industries. The people also are very much unlike in the way they live and in their thoughts. What is true of one part is not true of another.

HOW DOES ONE GET TO THE SOUTH?

From Washington several lines of railway lead southward. We may go to Richmond, one of the most interesting cities in the United States. It was founded soon after 1737 and in 1779 became the capital of Virginia. During most of the Civil War it was also the capital of the Confederacy. It is a beautiful city overlooking the James River, with large parks, beautiful drives, and stately homes.

From Richmond we may go westward to Charlottesville, to see the University of Virginia, founded by Thomas Jefferson; or we may go to some of the delightful resorts among the mountains; or we may go to Lexington, a spot sacred to the Southern people, for there General Lee spent his last years as president of

Washington College, and there Stonewall Jackson taught in the Virginia Military Institute. Both are buried there.

On the other hand we may go from Richmond down the river past the ruins of Jamestown, where Englishmen first succeeded in planting a permanent colony in our country, on our way to Norfolk and Newport News, both busy cities, on one of the best harbors in the world. There are great shipyards at Newport News, and perhaps we may see a ship launched. What a thrill it gives one to see the land where the first American state began to grow. Old Point Comfort, the site of Fortress Monroe, is a favorite resort for health and pleasure-seekers, winter and summer, and nearly always vessels of the United States Navy are in the harbor or the Navy Yard at Portsmouth.

ROANOKE ISLAND, WHERE SIR WALTER RALEIGH FAILED

From Norfolk it is a short journey to the eastern coast of North Carolina, with broad shallow sounds shut off from the sea by sand bars. We may visit Roanoke Island, where Sir Walter Raleigh tried three times to plant a colony, and see where the old fort stood. All this section is low and fertile, with so many streams that boats are used as often as carriages to go from place to place. Newberne is an old town, founded more than two hundred years ago by Swiss settlers, and further to the south is Wilmington, on the Cape Fear River, also an old town. It is an important port from which cotton and naval stores go to all parts of the world. During the Civil War it was one of the chief ports from which steamers ran the blockade, taking out cotton and bringing back manufactured articles, for which there was such sore need in the Confederacy.

In the centre of the state is Raleigh, the capital of the state, named for the man who planted three colonies in the state. Further to the west are Durham, Greensboro and Winston, all important manufacturing towns, which send their products to all parts of the world. At Chapel Hill, near Durham, is the University of North Carolina, founded in 1789, one of the oldest state universities.

Going southward from Greensboro, we are seldom out of sight of a furniture factory or a cotton mill, until we reach Charlotte, the largest city in the state, and a

centre of the cotton industry, for North Carolina has more mills than any other state. Perhaps, however, we turn west at Salisbury and go to Asheville among the mountains, or to some of the other resorts in the "Land of the Sky." Thousands of tourists visit these mountains every year. In summer they come from the South; in winter from the North.

CHARLESTON, THE BEAUTIFUL OLD CITY WHERE THE WAR BEGAN

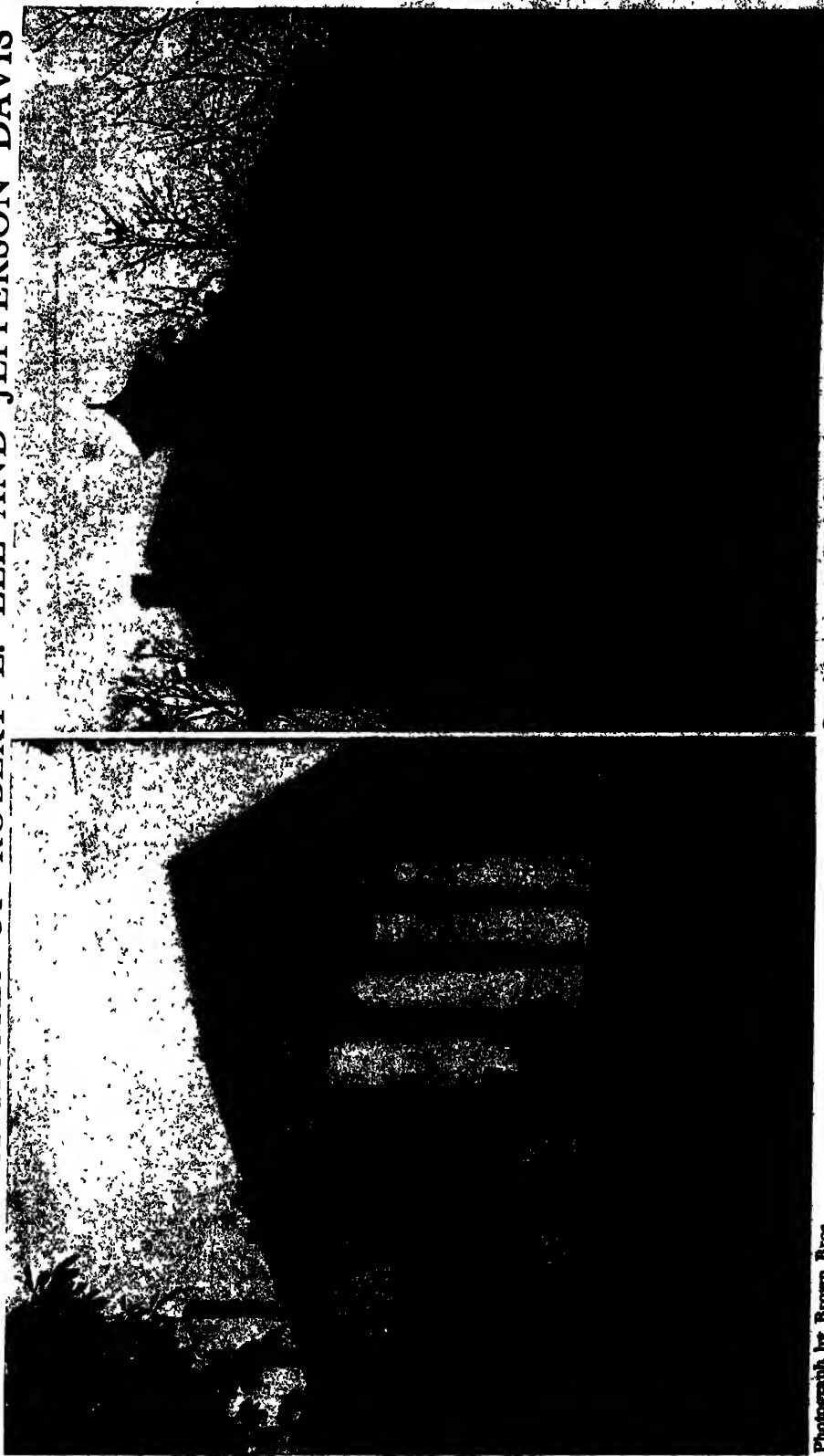
One speaking of South Carolina always thinks first of Charleston, the beautiful, some pictures of which we show on another page. The low country in which Charleston is situated is famous for the production of the sea-island cotton, and of rice. In some sections few white people live, and we see black faces almost entirely. More than half the people of this state are negroes. Columbia, the capital, was burned after its capture by General Sherman in 1865, but has been rebuilt. Its broad streets, with their fine trees, its monuments and public buildings, and its great manufacturing establishments make it worth a visit. Aiken is a famous winter resort.

There are other thriving towns in South Carolina but we are now on our way to Atlanta, the chief city of Georgia. Nearly all of the cities and towns we have mentioned are old, but we come now to a town which is comparatively new. It was well-situated for trade, and was beginning to gain importance before the Great War. Since that time it has grown rapidly and is often compared to the Western cities. The principal business streets are bordered by high buildings and there are many fine residences on others. Atlanta was the home of Joel Chandler Harris whose Uncle Remus stories all of you have read.

THE COTTON FIELDS AND THE FORESTS OF GEORGIA

The state grows much cotton and manufactures much that it grows. The pine trees furnish tar, pitch and turpentine. The two chief cities in the eastern part are Augusta, on the Savannah River, over two hundred miles from the mouth, and Savannah, only a few miles from the sea. Both are important manufacturing cities, both send ships to all parts of the world, and both are popular winter resorts. Sea-island cotton grows on the coast, and raising fruits and vegetables for the northern markets is also an im-

THE VIRGINIA HOMES OF ROBERT E. LEE AND JEFFERSON DAVIS



Photograph by Brown Bros.

These two homes are particularly interesting to Southern boys and girls. The one on the left is Arlington, just across the Potomac from Washington, which belonged to Mrs. Robert E. Lee. It now belongs to the United States, and the grounds are a National Cemetery. The other house was occupied by Jefferson Davis while he lived in Richmond, and is sometimes called "The White House of the Confederacy." It is now a Confederate museum, and contains many relics of distinguished Southerners.

Copyright, 1901, by H. C. White Co.

portant industry. We are now getting so far south that winter is hardly more than a name; though ice forms occasionally during the colder months.

THE LAND WHERE IT IS ALWAYS SUMMER

South of Georgia is the state with the longest coast line, Florida, stretching out like a long finger into the sea. It is almost entirely an agricultural state, except for the manufacture of tobacco and lumber. Raising tropical fruits and vegetables for the northern markets is the chief industry. Oranges, grapefruit and pineapples are known to us all. Strawberries ripen before the snows are gone in New England, and many other berries are also grown.

Early vegetables are sent to the northern markets before gardens are even planted in that section. Much of the southern part of the state is a swamp, known as the Everglades, inhabited only by Indians and a few white men who have pushed their way into the wilds.

Alligators, snakes and tropical birds abound, but the plume-hunter has almost destroyed several species of the birds for their feathers. These swamps are now being drained so that the land can be cultivated.

The climate draws thousands every year who seek to escape the cold of their homes, and for their accommodation many gorgeous hotels have been built. St. Augustine, the oldest city in the United States, Tampa and Palm Beach are among the leading resorts. Jacksonville is the largest city, but the capital is Tallahassee.

ALABAMA, A STATE OF COTTON, COAL AND IRON

Our next state is Alabama, low and swampy in the south near the Gulf, but hilly further north, with mountains of coal and iron. Here were, and still are, great plantations upon which hundreds of negroes work. In some counties they outnumber the whites five to one. The state is one of the largest producers of cotton, but has also great mineral wealth. Mobile, on Mobile Bay, opening from the Gulf of Mexico; is an old city which was once the capital of the Louisiana Territory, and has been in turn under French, British, Spanish and American control.

Montgomery is the capital, and here the Confederate government was organized February 4, 1861. Birmingham,

sometimes called the Southern Pittsburgh, manufactures much iron and steel, and has grown into a city on that account. At Tuskegee is the Tuskegee Institute for the education of colored people in various trades. Booker T. Washington was the first president.

SOME OF MISSISSIPPI BELOW THE LEVEL OF THE RIVER

The adjoining state of Mississippi is also a great producer of cotton, though other crops also grow well as the soil is very rich. Along the Mississippi, great banks called levees have been built to protect the fields from overflow by the floods of the great river. Nearly all the people live in the country, as the cities are small. More than half the population is composed of negroes. Natchez and Vicksburg, on the Mississippi, are the chief cities. The latter was fortified by the Confederate armies during the Civil War and was only taken after a long siege in 1863, by the Union forces under General Grant, as you may read on another page. The capital is Jackson, near the centre of the state.

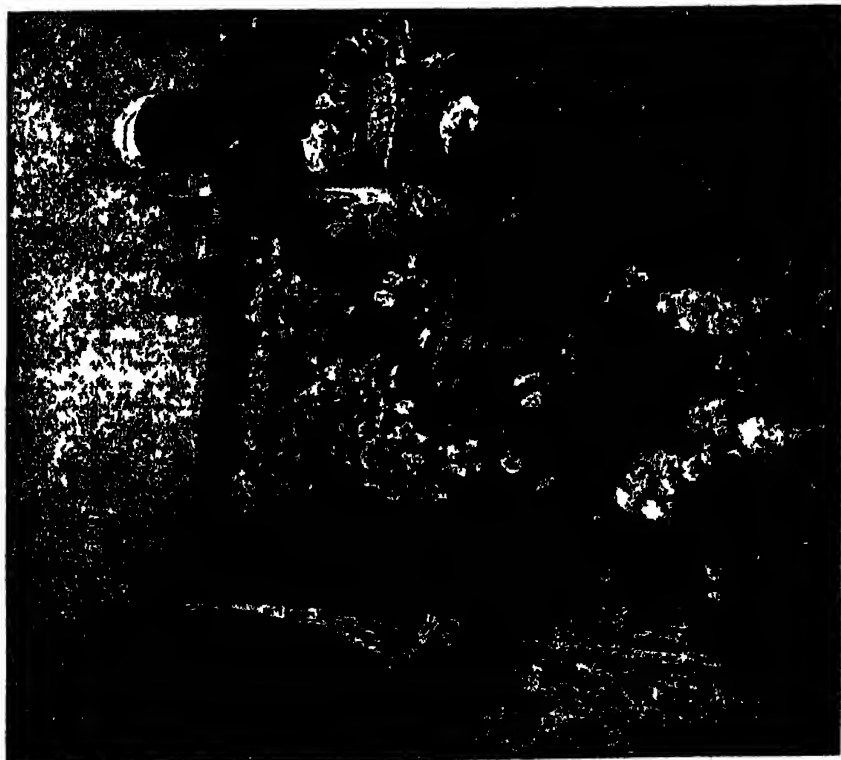
You may read on page 1396 how the great Louisiana Territory was purchased by the United States, and to this day signs of its former French ownership still may be seen. Some of the inhabitants speak only French, though the number of such is growing smaller. In New Orleans, the chief city, one part is called the "French quarter," and shows many quaint reminders of bygone days. This city is below the level of high water in the Mississippi, which is kept out by the levees. In the cemeteries the dead are buried in vaults constructed above the ground. The Carnival is held in the spring, ending with Mardi Gras, the last day before Lent, and attracts thousands of visitors. The city is noted for its flowers.

There are no other large cities. Shreveport, and Baton Rouge, the capital, are the largest. The state raises most of the sugar-cane grown in the United States, as well as much cotton, rice and corn. The forest wealth in pine and cypress is enormous.

TEXAS IS LARGER THAN MOST COUNTRIES OF EUROPE

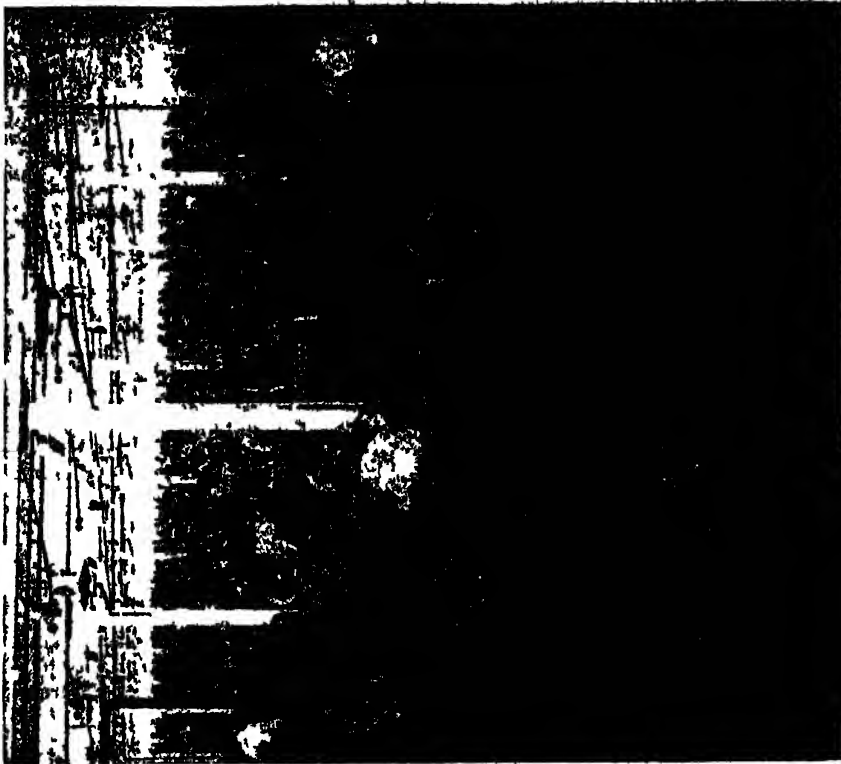
Leaving Louisiana and crossing over into Texas brings us into an empire which would require a book to describe. It is the largest state in the Union. Some counties are larger than several

COTTON FIELD AND COTTON MILL IN NORTH CAROLINA



Copyright, 1899, by R. L. Sungle

North Carolina has become one of the leading states in the manufacture of cotton, which is very often grown in fields around a mill. Here are cotton pickers at work, and also the immense weaving room of the White Oak Mills of Greensboro, where cotton is being transformed into cloth. Though negroes cultivate and pick the cotton, they seldom work in the mills. That work is done by white men, women and children, most of whom have come from the farms to the mills. The mills are generally in villages. Few are in cities. In fact there are few cities, or even large towns, in North Carolina. North Carolina has more cotton mills than any other state, but many are small.



Copyright, 1907, by H. C. White Co.

states. In population it ranks fifth and is growing rapidly. Almost every variety of soil is to be found, and many different crops can be grown. Though for a long time cattle-raising was the chief industry, agriculture now holds the first place, and considerable manufacturing is developing. There are yet, however, many great ranches where thousands of cattle feed.

As you have read in another volume, Texas was once a part of Mexico and gained independence by hard fighting. Along the Rio Grande, which now separates the state from Mexico, the influence of that nation is strong. The inhabitants of Texas have come from every state in the Union, and there is room for thousands more.

The chief cities are San Antonio, a picturesque city founded by the Spaniards about two hundred years ago; Dallas, a thriving manufacturing city; Galveston, the principal port; El Paso, on the Rio Grande, just across from Mexico; Houston, named for Sam Houston, the great Texan, and Austin, the capital.

West of Texas lie the new states of New Mexico and Arizona, but their population is small as yet, and they belong to the West rather than to the South. The new state of Oklahoma, north of Texas, was until recently Indian Territory, and was not a part of the Confederacy. This state has increased rapidly in population, and the people are prosperous. The capital is Oklahoma City. Towns grow up in this state, almost in a night.

ARKANSAS HAS A GREAT VARIETY OF SURFACE

Arkansas, north of Louisiana, is almost altogether a farming state, though the mineral wealth is considerable, and the forest wealth is very great. Next to the Mississippi, the land lies low and is very fertile, and the same is true of the land along the Arkansas River, which divides the state into almost equal parts.

The only city of considerable size is Little Rock, which is also the capital. Hot Springs is a flourishing little city, which has grown up around many springs of hot water, which have medicinal properties. Thousands visit these springs every year to bathe in the waters, and to drink the waters of some of them. The springs are owned by the United States.

TENNESSEE IS AN INTERESTING STATE FOR MANY REASONS

We may now turn eastward and cross the Mississippi into Tennessee at Memphis, on the only bridge across the stream south of St. Louis. This is the largest city in Tennessee, has a great trade up and down the river, and is becoming an important manufacturing city.

The state itself is one of the most interesting in the Union for many reasons. It was originally a part of North Carolina, which gave up its rights just after the Revolution. Almost every variety of soil and climate may be found, as we go from the lowlands below the level of the Mississippi, eastward through a fine agricultural and grazing country to the high mountains, which separate it from North Carolina. Along the Mississippi the vegetation is almost tropical, while in the mountains many plants and trees which are generally found much further north grow freely.

The capital is Nashville, a beautiful city, important in the Civil War. Vanderbilt University, George Peabody College for Teachers, and other educational institutions are located here. Chattanooga, near the Georgia line, is a thriving manufacturing city. Here one of the bloodiest battles of the Civil War was fought. Knoxville is also a thriving city.

WHAT WE DO NOT TELL ABOUT THE SOUTH

Now we have told something of all those states which seceded, and tried to form a new nation, but which are now thoroughly and entirely a part of the United States. Many of the people of Missouri and Kentucky, as well as of Maryland and Delaware, like to call themselves Southerners, but we have not space to speak of those states just now.

Much could be written of life in the South, of the negroes, of the sports, manners and customs of the people, but all these must be left for another time. All the Southern States have increased greatly both in population and wealth since the Civil War. Some are rapidly becoming manufacturing states, instead of devoting almost all their attention to agriculture. The most important industries are the manufacture of cotton yarn and cloth, cotton seed oil, furniture and other articles of wood, tobacco, iron and steel, but there are many others.

THE NEXT STORY OF THE UNITED STATES IS ON PAGE 6071.

CHARLESTON, THE BEAUTIFUL



The most fashionable residence district of the delightful city of Charleston is the Battery on the water front. No city in the United States is more attractive as a place of residence. This charm has always been a part of Charleston, and is felt by every visitor. The capture of Fort Sumter in the harbor, in 1861, by the newly organized Confederate forces, was the beginning of the Civil War.



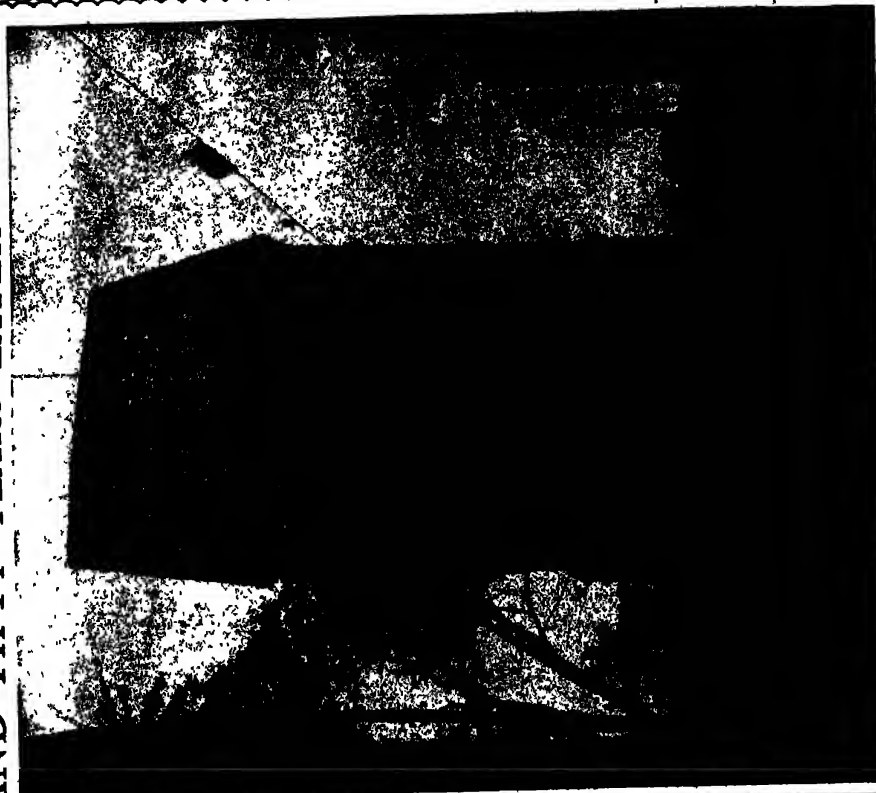
Though Charleston is a beautiful city with a restful atmosphere, it is also an important port. From its docks ships sail to Europe carrying cotton, rice and many other things. This is the Commercial Wharf. The bales of cotton shown may soon be on the other side of the world. The South is the world's great source of cotton and sends abroad more than half of the crop raised in the section.

ATLANTA IN WAR TIME AND FIFTY YEARS LATER



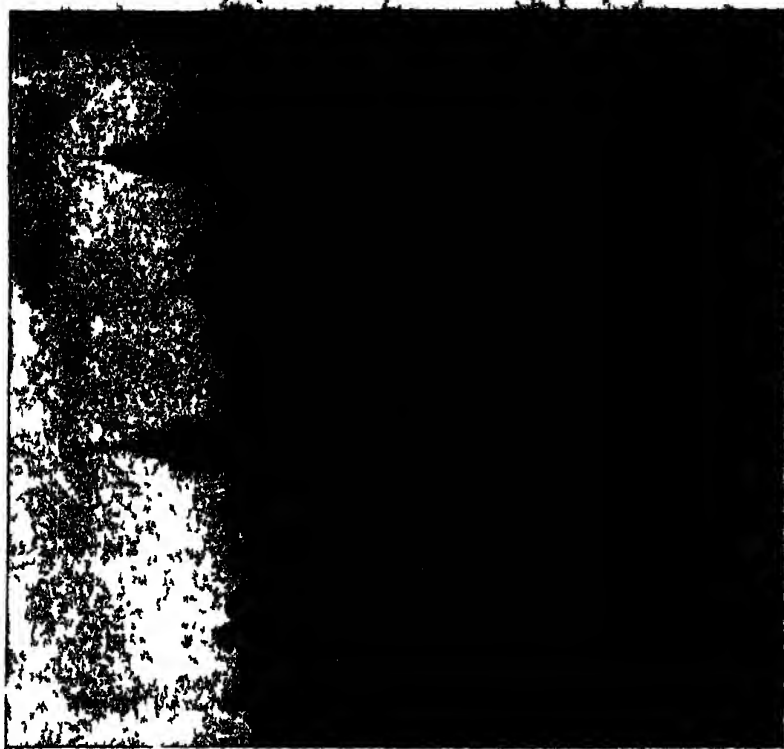
Photograph by Brady.

On November 17, 1864, during the Civil War, the greater part of Atlanta was burned by order of General Sherman, who had captured the town after hard fighting. Its growth since that time has been marvelous, both in population and wealth. The Candier building shown here is only one of many great office and manufacturing buildings in the thriving city. Many great establishments in other sections have their Southern offices in Atlanta, which is a great railroad and manufacturing centre of the South.



Picture from Brown Bros.

THE OLDEST CITY IN THE UNITED STATES



You were told of the founding of St. Augustine in 1565, and that it is the oldest city in the United States. While Florida was still a possession of Spain. Next it you see telephone wires, a mail box and the signs of modern life. On the right is one of the first houses in which thousands go every year to escape the cold of northern winters. There are many of these winter homes in Florida, some of them very large and palatially furnished.

Pictures copyright by H C White Co

THE CAPITOLS OF TWO SOUTHERN STATES



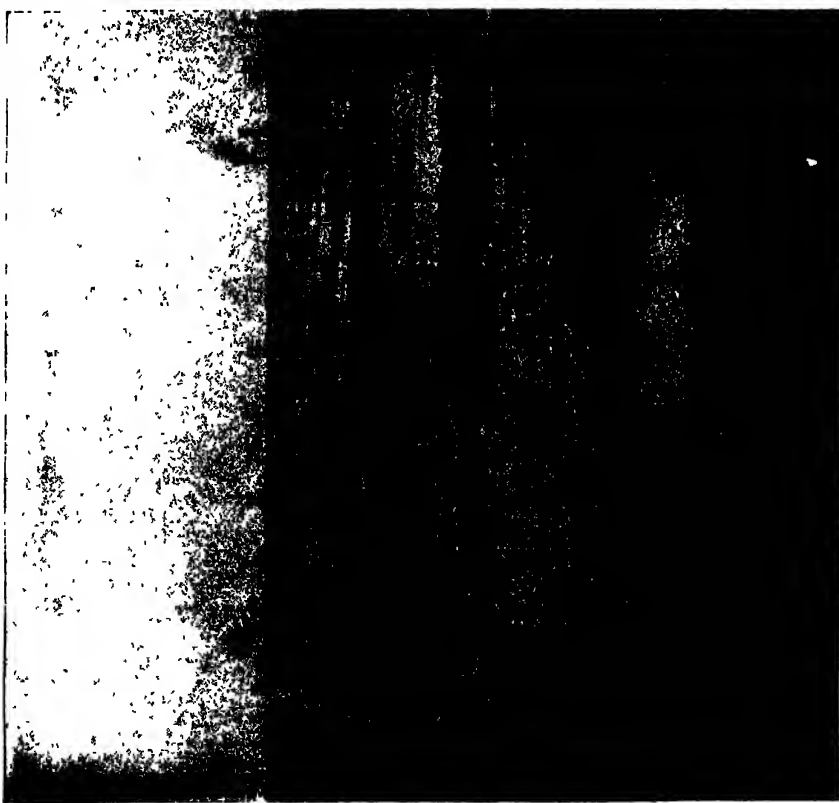
Situated at the end of a broad street in the pleasant little city of Montgomery is the Capitol of Alabama. Here the delegates from seven Southern states met in February, 1862, and formed the Confederate States of America. The seat of government was soon changed, however, to Richmond.



This is the Capitol of Mississippi at Jackson, a very dignified building, evidently modeled after the National Capitol at Washington, though with many changes. If you will study the pictures of Greek architecture given elsewhere you will see how much our public buildings have been influenced by men who lived more than two thousand years ago.

Pictures from Brown Bros

TWO VIEWS IN NEW ORLEANS, THE CRESCENT CITY



New Orleans, the largest city in the South, is built on the Mississippi River, more than one hundred miles from the mouth. It is built on a bend of the river, and is often called the "Crescent City." As much of it is below the level of the river, great banks called the levees have been built to shut out the water, and these also serve as wharves. Our pictures show steamers loading at the levee, and Canal Street, one of the principal thoroughfares of the city. This street divides the old French portion of the city from the newer American part. New Orleans is unlike any other American city, and thousands of tourists from other parts of the country visit it.

Copyright, 1901, 1902, by H. C. White Co.

COUNTRY AND TOWN IN TEXAS



Texas is an empire in itself, and can support a population many times larger than it has at present. It is the leading state in cotton, but can grow almost any crop produced elsewhere. This is a field of Kafir corn, one of the best food crops for cattle, but in Africa, India and China the seeds are used for human food also. This crop was grown near Amarillo, Texas, and the yield is very heavy.



Dallas is not only the leading manufacturing city of Texas, but is also the leading cotton market of the United States away from the seacoast. The surrounding country is very fertile, and the city is growing rapidly in population and wealth. It is a railroad centre, an educational centre, and is being developed according to a city plan drawn up by experts. High commercial buildings are being constructed.

CHATTANOOGA AND NASHVILLE, TENNESSEE



Around Chattanooga, now so peaceful and prosperous, were fought some of the fiercest battles of the Civil War. The mountain beyond the city is Missionary Ridge. On November 25, 1863, a Federal army under General George H. Thomas took by storm these heights defended by Confederates under General Braxton Bragg. Chattanooga was in turn in possession of Confederate and Federal armies.



The state Capitol at Nashville, Tennessee, stands on a considerable elevation and looks somewhat like a fortress. In fact during the Civil War it was so occupied, and the walls yet bear the marks of shells. Tennessee was originally a part of North Carolina, and the first settlers came from that state and from Virginia.

Photographs by Brown Bros.

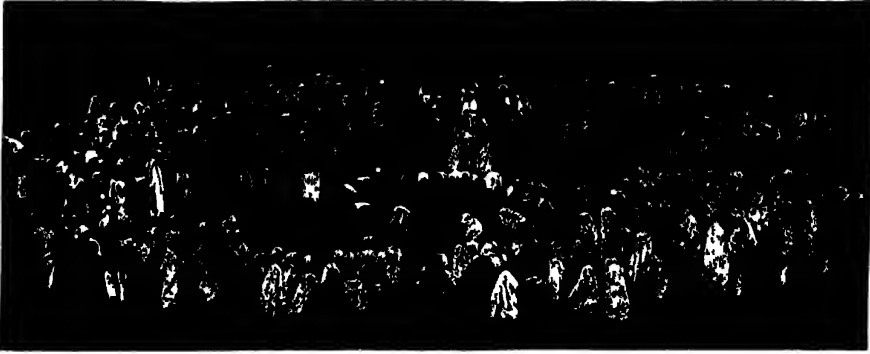
THE GIRL WHO PLUCKS THE TEA FOR YOU



The picking of the leaf is now practically the only part of the industry in which the tea is touched by hand. This woman, as she plucks the young leaf-shoots, puts them into the basket on her back.

Photographs on these pages are taken by the India Tea Association, Davidson & Co., Underwood & Underwood, and others.

The Book of FAMILIAR THINGS



Tea-pickers at play after a day in the tea gardens in India.

THE STORY IN A TEACUP

WE think little enough of the tiny leaf which floats in our cup of tea, yet the little leaf has had a world of adventure. It may have grown in China, or in India or Ceylon. It has sprung up on land rich with the leaves and fibres of a dead forest; it has borne the intense heat of the sun, and flourished through the heaviest rains.

It may have reached its prime on a sheltered plain, or attained perfection on a loam-strewn mountain-side. And when the life of the leaf upon the plant is ended by the picker, complicated machinery takes it and bakes it, ferments it and sorts it and packs it, and sends it forth.

Nobody can say certainly where the first of these plants grew, but it is believed that tea was first used in China, not for the preparation of a beverage but for a medicine. By the eighth century the custom of tea-drinking was so popular there that the first of a long series of taxes was imposed upon the article. After that tea-drinking spread rapidly among Chinese peoples, and since it became known to Western countries in the seventeenth century "China" and "tea" have been inseparably connected.

The gigantic tea industries of India and Ceylon which have grown up in the last century have to a large

CONTINUED FROM 5971

extent ousted Chinese tea from the markets of the world. Still, China has such an

enormous population of her own tea-drinkers to supply that it is probable she will continue to be the chief tea-producing country in the world, even if she does not export so much to other lands.

Excluding China and Japan, the principal tea-drinkers are the peoples of the United Kingdom, British Colonies, Russia and the United States. When tea first made its appearance in England early in the seventeenth century, it was so great a novelty that people paid from \$30 to \$50 a pound. At such a price it could never have become popular, but fully a hundred years later it still realized five dollars, or more a pound in London, and the principal shop at which it was sold combined the business of tea-dealing and banking. As more tea came, prices became lower, and so great was the demand that the fastest ships were devoted to the tea trade. As soon as they got their cargo they raced home, and the ship which arrived first got the best price for the new season's crop. In 1866 three little sailing ships left Foochow, on the coast of China, together, made the voyage of fully 16,000 miles in ninety-nine days, and were docked in London within two hours of one another.

The use became common in America before the Revolution.

With the growing demand for tea from China, the East India Company thought that they might introduce the growth into India, and sent to China for seeds. But before the messengers returned tea was discovered growing wild in Assam. Planters lost no time in cultivating it, and in 1843 the first cargo of Indian tea was sent to London.

A tea plant is ready for the picker when it is about four years old. The pickers, carrying a basket slung upon their shoulders, and supported by a band passed round the forehead, enter the plantation, and go from tree to tree. They take only a few buds and young tender leaves from each, and as they pick toss them into their baskets, which, when filled, are carried to the factory, and their contents weighed. The plant continues to grow all through the warm, rainy season, and picking goes on from day to day as new leaves come out.

WHAT HAPPENS AT THE FACTORY

At the factory the process of preparing tea is carried out. The tea is first emptied out on to shallow trays, and a pound of tea covers an area a yard square. The trays are then carried to a heated room, through which a strong current of air is forced. This is to soften and wither the tough leaf, which is ready when it has become quite soft and flaccid, a process which usually occupies from eighteen to twenty hours. Special machines consisting of cylinders rotating in hot air are sometimes used instead of the open trays. Next the leaves are passed through a machine which curls them, and presses the juice out on to their surface. Following this the tea is spread out in darkened rooms or placed in drawers, in layers one or two inches thick, and covered with damp curtains, so arranged that they do not actually touch the leaves. The heat and moisture cause the tea to ferment, after which it goes through a sort of baking process for a few minutes to arrest fermentation and to dry out the moisture caused by it. During fermentation the leaf changes its color, until it becomes a bright copper shade, and the flavor of the tea develops.

The leaves have now to be sorted into sizes and qualities, sieves of various

meshes being employed for the purpose. Then, after a second drying, the tea is ready for market. It is packed by machinery into chests lined with lead, and away it goes to the ship.

The process, of course, varies in different districts. Great care must be exercised in the choice of wood for the chests, because tea readily absorbs odors and thereby loses its own flavor. A particular three-ply wood consisting mainly of pine-wood is now much used.

So far we have been speaking of the Indian method of treatment, in which, from the time that it is picked, the tea is not handled at all. In China it is different. There the tea is rolled by hand and trodden by foot. Machinery is now being slowly introduced.

For many years attempts have been made to grow tea in the United States, and there are tea-gardens of considerable size at Summerville, South Carolina, and at Pinehurst in North Carolina. Several thousand pounds a year of excellent tea are produced, but the cost of labor is so much more than in the East, that only expensive grades can be produced at a profit.

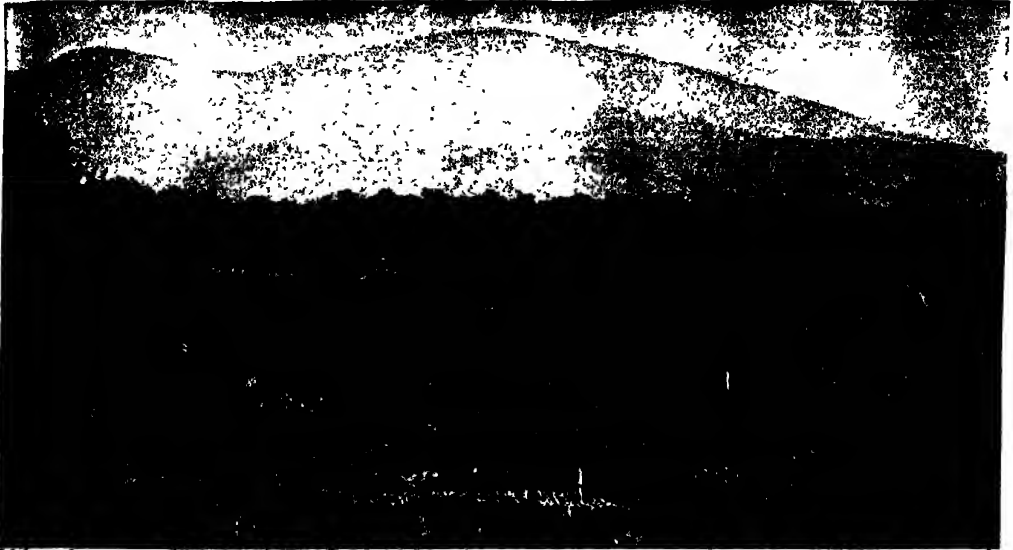
WHEN THE TEA SHIP ARRIVES

The tea trade is very important, and the way the tea is handled in Great Britain is interesting. When it arrives samples are drawn from the cargo and sent to the merchants, who submit them to the tea-taster, so that they may have his opinion on the quality and the value of the shipment. He has a tiny pot of tea made from each, and takes a sip from each brew. Those that he likes he commends, and the merchant buys them at the sale.

When the tea reaches the merchant's warehouse it has to be blended. The merchant has a book in which are recorded all the different qualities of the water supplied to various districts. For each district there is a special blend. A tea which would be satisfactory if brewed in one part of the country would be quite unsuitable to the water of another part, and blending is therefore one of the important features of the industry. Formerly it was done by men with shovels on a floor: now it is done in immense rotating drums which thoroughly mix the selected kinds.

CONTINUED ON PAGE 6050.

THE LEAF THAT REFRESHES MILLIONS



Although tea was introduced into England less than 300 years ago, no less than 295,000,000 pounds is now used in the United Kingdom in a single year. This shows how the shrubs are cultivated in rows.



The tea plant is an evergreen shrub with leathery leaves, and white flowers which change into woody seed-vessels. Our teas generally consist of dried leaves of several varieties of tea plant blended together.

WHAT A TEA GARDEN IS LIKE IN INDIA

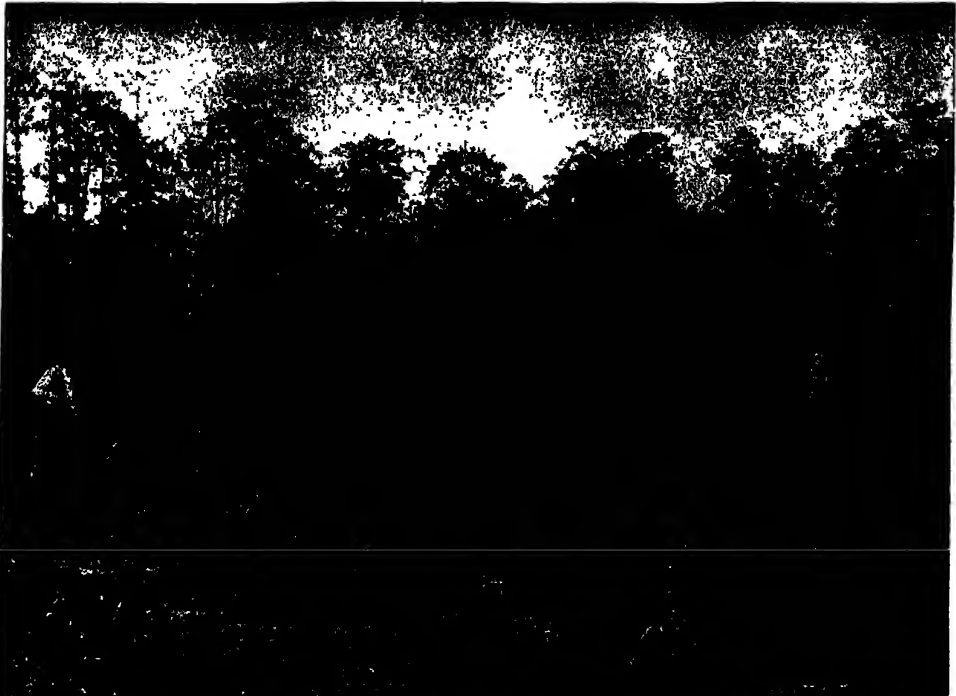


Originally nearly all the tea came from China, in 1843 a pound of tea came to London from Assam,—the beginning of the tea trade of India, where half a million people are employed gathering the leaves.



Many of the tea-pickers are boys and girls, like these little Cingalese, and are quite as quick and skilful at their work as the grown-ups. India and Ceylon now produce 500 million pounds of tea a year.

A TEA GARDEN IN NORTH CAROLINA

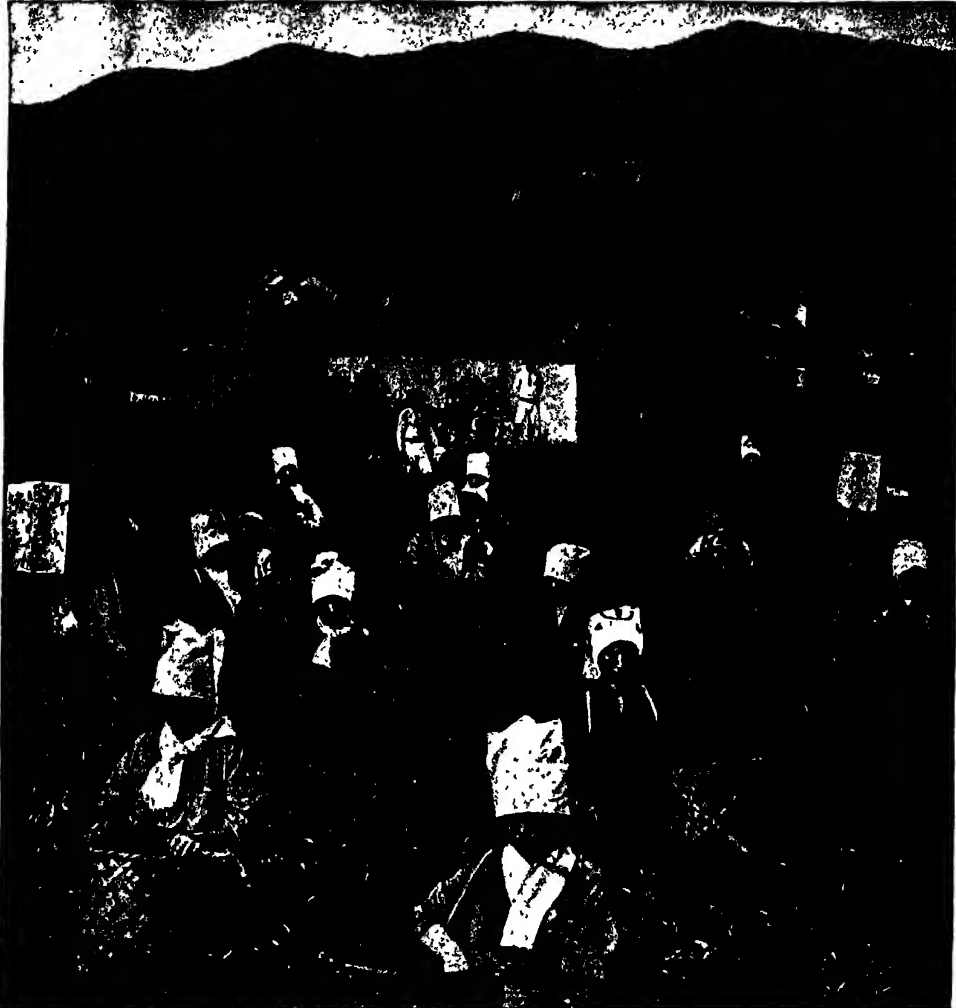


For years attempts have been made to grow tea in the United States, and success has finally come. Both in North and South Carolina are flourishing tea gardens. These pictures show a part of the gardens at Pinehurst, North Carolina. The land devoted to tea is surrounded by slender young pines. The plants in this part of the garden had grown old and straggling, and were cut back almost to the roots.



The pickers here are chiefly negro women and children, who pick the leaves carefully to avoid bruising them, and deposit them in the baskets. This garden produces an especially fine quality of black tea. The tea plants here seem to be able to withstand cold weather without great damage. Travelers say that they have never seen finer plants in Ceylon or India. Compare this picture with other pages.

A HAPPY TEA PARTY IN A JAPANESE GARDEN

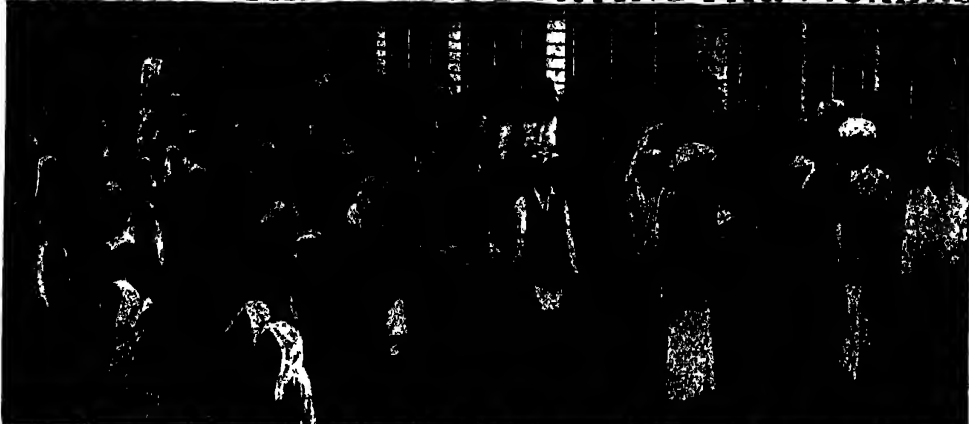


Three-quarters of a century ago China supplied most of the world's tea, but since that time other countries have grown immense quantities of tea, and Japan now produces more than forty-five million pounds a year.



The Japanese women in the tea plantations frequently carry their babies tied to their backs, as here shown. Japan exports much green tea, which is from the same plant as black tea, but is not fermented. Photographs copyright by Underwood & Underwood.

WEIGHING THE TEA AND PAYING THE PICKERS



Twice a day the coolies bring their baskets of leaves to the factory, that the stock which they have picked may be weighed, and it is a very picturesque sight when they are gathered together, as shown here.



Pickers are paid according to the weight of leaves brought in, and there is much excitement as the baskets are placed on the scale. Of course, the quantity picked varies according to the skill of the pickers.



Even more exciting than the weighing is the paying of the wages. The pickers line up and approach the paying-out clerk in procession, each checking his or her money before passing to make room for the next.

THE TEA LEAVES ARE SIFTED AND DRIED



During the rainy season, when young leaf-shoots are forming, leaves are picked every eight or nine days. At the factory they are spread out on racks, as shown here, so that some of the moisture may evaporate.



The leaves are next rolled to crush their cells and release the juices, then spread out in the air, rolled again, and fired or baked, after which the leaves are separated from the stalks and sifted, as shown here.



The tea is now fired once again, being placed on trays in what is called a drier, while currents of hot air are passed gradually over it until the leaves are firm and crisp. It is then ready for packing.

PACKING THE TEA FOR ITS LONG JOURNEY



The Chinese still pack tea in the old-fashioned way. It is put into large cases lined with lead foil, and is trodden in by the coolies with their bare feet. Then the foil is closed over, and the lid is nailed down



Modern methods prevail in India and Ceylon, whence much tea comes. There, much of the tea is packed ready for the stores in small packets, the metal foil covering being soldered down to keep the tea air-tight.

SENDING THE TEA OUT TO THE STORES



The tea that comes over in large cases is bulked and blended in the warehouses. This means that cases of various kinds of tea are emptied out in one great heap on the floor, and mixed by men or by machines.



Then it is packed back into the large cases, pressed down tightly, and sealed up ready for the stores. Australians and New Zealanders are the biggest tea-drinkers in the world, and the English come next.

The Book of POETRY

A COURT LADY

"A COURT LADY" was written by Elizabeth Barrett Browning. Both Mrs. Browning and her famous husband were deeply interested in the struggle for a united Italy and both wrote many poems dealing with this subject. The Brownings lived in Italy for a great number of years, and learned to love it as dearly as they did their own native land of England. Among Mrs. Browning's other well-known poems dealing with Italy is one entitled "Mother and Poet."

HER hair was tawny
with gold, her
eyes with purple were
dark,
Her cheeks' pale opal burnt with a
red and restless spark.

Never was lady of Milan nobler in
name and in race,
Never was lady of Italy fairer to see
in the face

Never was lady on earth more true as
woman and wife,
Larger in judgment and instinct, prouder
in manners and life.

She stood in the early morning, and said
to her maidens, "Bring
That silken robe made ready to wear at
the court of the king.

"Bring me the clasp of diamonds, lucid,
clear of the mote,
Clasp me the large at the waist, and clasp
me the small at the throat.

"Diamonds to fasten the hair, and dia-
monds to fasten the sleeves,
Laces to drop from their rays, like a
powder of snow from the eaves."

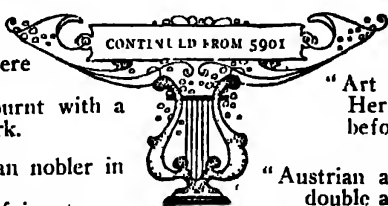
Gorgeous she enter'd the sunlight which
gather'd her up in a flame,
While, straight in her open carriage, she
to the hospital came.

In she went at the door, and gazing from
end to end,
"Many and low are the pallets, but each
is the place of a friend"

Up she pass'd through the wards, and
stood at a young man's bed:
Bloody the band on his brow and livid the
droop of his head.

"Art thou a Lombard, my brother?
Happy art thou," she cried,
And smiled like Italy on him: he dream'd
in her face and died.

Pale was his passing soul, she went on
still to a second:
He was a grave hard man, whose years by
dungeons were reckon'd.



Wounds in his body
were sore, wounds in
his life were sorer.
"Art thou a Romagnole?"
Her eyes drove lightnings
before her.

"Austrian and priest had join'd to
double and tighten the cord
Able to bind thee, O strong one,—
free by the stroke of a sword.

"Now be grave for the rest of us, using
the life overcast
To ripen our wine of the present, (too
new,) in glooms of the past."

Down she stepp'd to a pallet where lay a
face like a girl's,
Young, and pathetic with dying,—a deep
black hole in the curls.

"Art thou from Tuscany, brother? and
seest thou, dreaming in pain,
Thy mother stand in the piazza, searching
the lists of the slain?"

Kind as a mother herself, she touch'd his
cheeks with her hands:
"Blessed is she who has borne thee, al-
though she should weep as she stands."

On she pass'd to a Frenchman, his arm
carried off by a ball:
Kneeling . . . "O more than my brother!
how shall I thank thee for all?"

"Each of the heroes around us, has
fought for his land and line,
But *thou* hast fought for a stranger, in
hate of a wrong not thine.

"Happy are all free peoples, too strong to
be dispossessed:
But blessed are those among nations, who
dare to be strong for the rest!"

Ever she pass'd on her way, and came to
a couch where pin'd
One with a face from Venetia, white with
a hope out of mind.

Long she stood and gaz'd, and twice she
tried at the name,
But two great crystal tears were all that
falter'd came.

Only a tear for Venice? she turn'd as in
passion and loss,
And stoop'd to his forehead and kiss'd it,
as if she were kissing the cross.

Faint with that strain of heart she mov'd
on then to another,
Stern and strong in his death. "And dost
thou suffer, my brother?"

Holding his hand in hers:—"Out of the
Piedmont lion
Cometh the sweetness of freedom! sweetest
to live or to die on."

Holding his cold rough hands,—“Well, oh,
we'll have ye done
In noble, noble Piedmont, who would not be
noble alone.”

Back he fell while she spoke. She rose to her
feet with a spring,—
“That was a Piedmontese! and this is the
Court of the King.”

THE LOST LEADER

In the “Lost Leader” Robert Browning shows that the
man who relinquishes an ideal suffers, not the ideal itself.

JUST for a handful of silver he left us,
Just for a ribbon to stick on his coat—
Found the one gift of which fortune bereft us,
Lost all the others she lets us devote;

They, with the gold to give, do'd him out
silver,

So much was theirs who so little allow'd,
How all our copper had gone for his service!
Rags—were they purple, his heart had
been proud;

We that had lov'd him so, follow'd him,
honor'd him,

Liv'd in his mild and magnificent eye,
Learn'd his great language, caught his clear
accents,

Made him our pattern to live and to die!
Shakespeare was of us, Milton was for us,
Burns, Shelley, were with us,—they watch
from their graves!

He alone breaks from the van and the free-
man,

He alone sinks to the rear and the slaves!

We shall march prospering,—not thro' his
presence;

Songs may inspirit us,—not from his lyre;
Deeds will be done,—while he boasts his
quiescence,

Still bidding crouch whom the rest bade
aspire.

Blot out his name, then, record one lost soul
more,

One task more declin'd, one more footpath
untrod,

One more devil's-triumph and sorrow for
angels,

One wrong more to man, one more insult
to God!

Life's night begins: let him never come back
to us!

There would be doubt, hesitation, and
pain,

Forced praise on our part—the glimmer of
twilight,

Never glad confident morn'ing again!

Best fight on well, for we taught him—strike
gallantly,

Menace our heart, ere we master his
own;

Then let him receive the new knowledge and
wait us,

Pardon'd in heaven, the first by the
throne!

THE CIRCLE

An old rhyme whose truth is being dramatically illus-
trated in these dark days of war. The writer is unknown.

WAR begets Poverty,
Poverty Peace:

Peace begets Plenty,

Then riches increase:

Riches bring Pride,

And Pride is War's ground,

War begets Poverty,

So goes the round

ALAS! HOW LIGHT A CAUSE MAY MOVE

Thomas Moore who wrote the following verses was an Irish
poet and singer and had great popularity in his own time.

ALAS! how light a cause may move
Dissension between hearts that love!
Hearts that the world in vain had tried;
And sorrow but more closely tied,
That stood the storm when waves were
rough,

Yet in a sunny hour fall off,
Like ships that have gone down at sea,
When heaven was all tranquillity!
A something light as air,—a look,
A word unkind or wrongly taken,—
Oh! love that tempests never shook,

A breath, a touch like this hath shaken!
And ruder words will soon rush in
To spread the breach that words begin;

And eyes forget the gentle ray
They wore in courtship's smiling day;
And voices lose their tone that shed
A tenderness round all they said;

Till fast declining, one by one,
The sweetnesses of love are gone,
And hearts, so lately mingled, seem
Like broken clouds,—or like the stream
That smiling left the mountain's brow,

As though its waters ne'er could sever,
Yet, ere it reach the plain below,
Breaks into floods that part for ever.

O you, that have charge of Love

Keep him in rosy bondage bound,
As in the fields of bliss above

He sits, with flowerets fettered round;—

Loose not a tie that round him clings

Nor ever let him loose his wings;

For even an hour, a minute's flight

Will rob the plumes of half their light

Like that celestial bird,—whose nest

Is found beneath far eastern skies,—

Whose wings, though radiant when at rest,—

Lose all their glory when he flies!

LOVE, DEATH, AND REPUTATION

This little fable appears in a collection of Charles and Mary Lamb's verses for children. It is probably by Charles Lamb, and is a poetic translation of a fable told in an old play of Queen Elizabeth's time. Its lesson is one of the most important we can learn—never to lose our good reputation.

ONCE on a time, Love, Death, and Reputation,

Three travelers, a tour together went;
And, after many a long perambulation,
Agreed to part by mutual consent.

Death said: "My fellow tourists, I am going
To seek for harvests in th' embattled
plain,
Where drums are beating, and loud trumpets
blowing,
There you'll be sure to meet with me again."

Love said: "My friends, I mean to spend
my leisure
With some young couple, fresh in Hymen's
bands;
Or 'mongst relations who, in equal measure,
Have had bequeathed to them house or lands."

But Reputation said: "If once we sever,
Our chance of future meeting is but vain;
Who parts from me must look to part for
ever
For Reputation lost comes not again"

SONNET

In this sonnet Wordsworth gave voice to discontent with his own age that—to his mind—was given up to material things.

THIS world is too much with us: late and
soon,

Cutting and spending, we lay waste our
powers;

Little we see of nature that is ours;

We have given our hearts away,—a sordid
boon!

This sea that bares her bosom to the moon, -
The winds that will be howling at all hours,
And are upgathered now like sleeping
flowers,—

For this, for everything, we are out of tune,
It moves us not. Great God! I'd rather be
A Pagan, suckled in a creed outworn:

So might I, standing on this pleasant lea,
Have glimpses that would make me less
forlorn;

Have sight of Proteus rising from the sea,
Or hear old Triton blow his wreathed horn

MEMORIES

Longfellow, in the following poem, points out that beautiful things and pleasant things never die, for their roots endure.

OF I remember those whom I have
known

In other days, to whom my heart was led
As by a magnet, and who are not dead,
But absent, and their memories overgrown
With other thoughts and troubles of my own
As graves with grasses are, and at their head
The stone with moss and lichens so o'er-
spread,

Nothing is legible but the name alone

And is it so with them? After long years,
Do they remember me in the same way,
And is memory pleasant as to me?
I fear to ask; yet wherefore are my fears?
Pleasures, like flowers, may wither and decay,
And yet the root perennial may be.

TO THOMAS MOORE

In this pledge to Thomas Moore it appears as though Lord Byron were thinking as much of himself as of his friend.

MY boat is on the shore,
And my bark is on the sea;
But, before I go, Tom Moore,
Here's a double health to thee!

Here's a sigh to those who love me,
And a smile to those who hate,
And, whatever sky's above me,
Here's a heart for every fate.

Though the ocean roar around me,
Yet it still shall bear me on:
Though a desert should surround me,
It hath springs that may be won.

Were't the last drop in the well,
As I gasped upon the brink,
Ere my fainting spirit fell,
'Tis to thee that I would drink

With that water, as this wine,
The libation I would pour
Should be—Peace with thine and mine,
And a health to thee, Tom Moore

SELECTIONS FROM "IN MEMORIAM"

THE path by which we twain did go,
Which led by tracts that pleased us well,
Thro' four sweet years arose and fell,
From flower to flower, from snow to snow:

And we with singing cheer'd the way,
And, crown'd with all the season lent,
From April on to April went,
And glad at heart from May to May

When each by turn was guide to each,
And Fancy light from Fancy caught,
And Thought leapt out to wed with
Thought
Ere Thought could wed itself with Speech.

LOVE SERVICEABLE

HE does not rightly love himself
Who does not love another more.
COVENTRY PATMORE.

THE THRESHOLD

This charming verse expresses the desire, common to us all, to remain akin to childhood, in spite of lengthening years.

LIFE lies before me, but shut is the door
On all my childish days No more, no
more
Shall I in all my years again be free
And careless - happy as I used to be.
So be it, Lord! I know that all is right;
I would not alter it or shrink the fight
Shut then the door!—but leave a little crack.
That when I meet a child I may slip back!

THE AUTHOR'S RESOLUTION IN A SONNET

George Wither was an English poet who reflects the spirit of the Cavalier or Royalist party although he fought for Parliament against the king, raising a troop of horse with money from the sale of his estates. His verse is very musical and highly polished.

SHALL I, wasting in despair
Dye, because a woman's fair?
Or make pale my cheeks with care
Cause anothers Roste are?
Be she fairer than the Day
Or the flowry Meads in May,
If she thinks not well of me,
What care I how faire she be?

Shall my seely heart be pin'd
Cause I see a woman kind?
Or a well disposed Nature
Joyned with a lovely feature?
Be she Meeker, Kinder than
Turtle-dove or Pellican.
If she be not so to me,
What care I how kind she be?

Shall a woman's Vertues move
Me to perish for her Love?
Or her wel deservings knowne
Make me quite forget mine own?
Be she with that Goodness blest
Which may merit name of best:
If she be not so to me,
What care I how Good she be?

Cause her Fortune seems too nigh
Shall I play the fool and die?
She that beares a Noble mind,
If not outward helps she find,
Thinks what with them he wold do,
That without them dares her woe
And unlesse that Munde I see,
What care I how great she be?

Great, or Good, or Kind, or Faire
I will ne're the more despair.
If she loves me (this beleve)
I will Die ere she shall grive
If she slight men when I woe,
I can scorne and let her goe,
For if she be not for me,
What care I for whom she be?

ORSAMES' SONG

We have very little of Sir John Suckling's verse that has been preserved. He was a courtier, gay and careless in his living, yet without possessed of a wit so polished and an ear so fine that each fragment is a little jewel.

WHY so pale and wan, fond lover?
Prithee, why so pale?
Will, when looking well can't move her,
Looking ill prevail?
Prithee, why so pale?

Why so dull and mute, young sinner?
Prithee, why so mute?
Will, when speaking well can't win her,
Saying nothing do't?
Prithee, why so mute?

Quit, quit, for shame this will not move.
This cannot take her
If of herself she will not love,
Nothing can make her
The devil take her!

TO LUCASTA, ON GOING TO THE WARS

These verses of Richard Lovelace are justly famed for the last couplet, which is so often quoted.

TELL me not, sweet, I am unkind,
That from the nunnery
Of thy chaste breast and quiet mind
To war and arms I fly.

True, a new mistress now I chase,
The first foe in the field,
And with a stronger faith embrace
A sword, a horse, a shield

Yet this inconstancy is such
As you, too, shall adore,—
I could not love thee, dear, so much,
Loved I not honor more

NIGHT

William Blake's verse is very musical and simple. We meet his animals and angels very often.

THE sun descending in the west,
The evening star does shine,
The birds are silent in their nest,
And I must seek for mine
The moon, like a flower
In heaven's high bower,
With silent delight,
Sits and smiles on the night

Farewell, green fields and happy grove,
Where flocks have ta'en delight,
Where lambs have nibbled, silent move
The sect of angels bright:
Unseen, they pour blessing,
And joy without ceasing,
On each bud and blossom,
And each sleeping bosom

They look in every thoughtless nest,
Where birds are covered warm,
They visit caves of every beast,
To keep them all from harm
If they see any weeping
That should have been sleeping,
They pour sleep on their head,
And sit down by their bed

When wolves and tigers howl for prey
They pitying stand and weep,
Seeking to drive their thirst away,
And keep them from the sheep
But if they rush dreadful,
The angels, most heedful,
Receive each mild spirit,
New worlds to inherit

And there the lion's ruddy eyes
Shall flow with tears of gold.
And pitying the tender cries,
And walking round the fold
Saying: "Wrath by His meekness,
And by His health, sickness,
Are driven away
From our immortal day.

"And now beside thee, bleating lamb,
I can lie down and sleep,
Or think on Him who bore thy name,
Graze after thee, and weep
For wash'd in life's river,
My bright mane forever
Shall shine like the gold,
As I guard o'er the fold"

ON HIS BLINDNESS

In his forty-fourth year, Milton whose sight had been failing for ten years, became totally blind. Yet in spite of this he wrote steadily until his death twenty-two years later.

WHEN I consider how my light is spent
Ere half my days in this dark world
and wide,
And that one talent, which is death to hide,
Lodged with me useless, though my soul more
bent
To serve therewith my Maker, and present
My true account, lest He returning chide ; "
"Doth God exact day-labor, light denied ? "
I fondly ask ; but Patience, to prevent
That murmur, soon replied : "God doth not
need
Either man's work or His own gifts ; who best
Bear His mild yoke, they serve Him best ,
His state
Is kingly ; thousands at His bidding speed,
And post o'er land and ocean without rest .
They also serve who only stand and wait "

THE RECONCILIATION

This beautiful little poem is one of the many lovely songs that occur in "The Princess" written by Alfred, Lord Tennyson

AS through the land at eve we went,
And plucked the ripened ears,
We fell out, my wife and I,—
Oh, we fell out, I know not why,
And kissed again with tears.

For when we came where lies the child
We lost in other years,
There above the little grave,
Oh, there above the little grave,
We kissed again with tears.

OLD FRIENDS

WE just shake hands at meeting
With many that come nigh,
We nod the head in greeting
To many that go by
But we welcome through the gateway
Our few old friends and true ;
Then hearts leap up and straightway
There's open house for you,
Old friends,
Wide open house for you.

The surface will be sparkling,
Let but a sunbeam shine,
But in the deep lies darkling
The true life of the wine
The froth is for the many,
The wine is for the few ;
Unseen, untouched of any,
We keep the best for you,
Old friends,
The very best for you

"The many " cannot know us,
They only pace the strand
Where at our worst we show us,
The waters thick with sand ,
But out beyond the leaping
Dim surge " 'tis clear and blue,"
And there, old friends, we're keeping
A waiting calm for you.
Old friends,
A sacred calm for you

BELIEVE ME, IF ALL THOSE ENDEARING YOUNG CHARMS

This is one of the most popular of Thomas Moore's songs and its musical setting is known to the majority of us.

BELIEVE me, if all those endearing young
charms
Which I gaze on so fondly to-day,
Were to change by to-morrow, and fleet in my
arms,
Like fairy-gifts fading away,
Thou would'st still be ador'd, as this moment
thou art,
Let thy loveliness fade as it will,
And around the dear ruin each wish of my
heart
Would entwine itself verdantly still.

It is not while beauty and youth are thine
own,
And thy cheeks unprofan'd by a tear,
That the fervor and faith of a soul can be
known,
To which time will but make thee more
dear ;
No, the heart that has truly lov'd never
forgets,
But as truly loves on to the close
As the sun-flower turns on her god, when he
sets,
The same look which she turn'd when he
rose.

THE NIGHT HAS A THOUSAND EYES

THE night has a thousand eyes
And the day but one,
Yet the light of the bright world dies
With the dying sun

The mind has a thousand eyes,
And the heart but one,
Yet the light of a whole life dies
When love is done

FROM " IN MEMORIAM "

OUR little systems have their day ,
They have their day and cease to be
They are but broken lights of Thee,
And Thou, O Lord, art more than they

Forgive my grief for one removed
Thy creature, whom I found so fair,
I trust he lives in Thee, and there
I find him worthier to be loved

I sometimes hold it half a sin
To put in words the grief I feel ;
For words, like Nature, half reveal
And half conceal the soul within.

WINTER

This charming stanza is by Walter Savage Landor.

SUMMER has doft his latest green,
And Autumn ranged the barley-mows
So long away then have you been ?
And are you coming back to close
The year ? It sadly wants repose

THE OLD WOMAN AND HER PIG



AN old woman was sweeping her house, and she found a little crooked sixpence. "What," she said, "shall I do with this little sixpence? I shall go to market and buy a little pig." As she was coming home she came to a stile. The piggy would not go over the stile. She went a little farther, and she met a dog, so she



said to the dog:

"Dog, dog, bite pig,

Piggy won't get over the stile, And I sha'n't get home to-night!"

But the dog would not.



SHE went a little farther, and she met a stick. So she said:

"Stick, stick, beat dog;

Dog won't bite pig,

Piggy won't get over the stile,

And I sha'n't get home to-night!"

But the stick would not.



SHE went a little farther, and she met a fire. So she said:

"Fire, fire, burn stick;

Stick won't beat dog;

Dog won't bite pig;

Piggy won't get over the stile,

And I sha'n't get home to-night!"

But the fire would not.

SHE went a little farther, and she met some water. So she said:

"Water, water, quench fire;

Fire won't burn stick;

Stick won't beat dog;

Dog won't bite pig;

Piggy won't get over the stile,

And I sha'n't get home to-night!"

But the water would not.



SHE went a little farther, and she met an ox.

So she said:

"Ox, ox, drink

water;

Water won't quench

fire;

Fire won't burn stick;

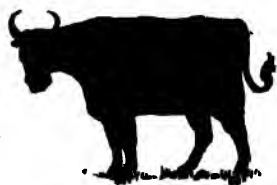
Stick won't beat dog;

Dog won't bite pig;

Piggy won't get over the stile,

And I sha'n't get home to-night!"

But the ox would not.



SHE went a little farther, and she met a butcher.

So she said:

"Butcher, butcher, kill ox;

Ox won't drink water;

Water won't quench fire;

Fire won't burn stick;

Stick won't beat dog;

Dog won't bite pig;

Piggy won't get over the stile,

And I sha'n't get home to-night!"

But the butcher would not.



SHE went a little farther, and met a rope. So she said:

"Rope, rope, hang butcher;

Butcher won't kill ox;

Ox won't drink water;

Water won't quench fire;

Fire won't burn stick;

Stick won't beat dog;

Dog won't bite pig;

Piggy won't get over the stile, And I sha'n't get home to-night!"

But the rope would not.



SHE went a little farther, and she met
a rat. So she said :



" Rat, rat, gnaw rope ;
Rope won't hang
butcher ;
Butcher won't kill
ox ;
Ox won't drink water ;
Water won't quench
fire ;
Fire won't burn stick ;
Stick won't beat dog ;
Dog won't bite pig ;
Piggy won't get over the stile,
And I sha'n't get home to-night ! "

But the rat would not.

SHE went a little farther, and she met
a cat, so she said :



" Cat, cat, kill rat ;
Rat won't gnaw rope ;
Rope won't hang butcher ;
Butcher won't kill ox ;
Ox won't drink water ;
Water won't quench fire ;
Fire won't burn stick ;
Stick won't beat dog ;
Dog won't bite pig ;
Piggy won't get over the stile,
And I sha'n't get home to-night ! "

BUT the cat said to her, " If you will
go to yonder cow, and fetch me a
saucer of milk, I will kill the rat." So
away went the old woman to the cow,
and said .

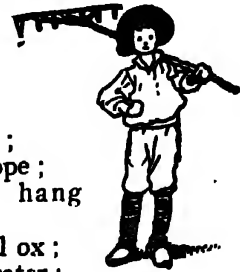


" Cow, cow, give me a
saucer of milk ;
Cat won't kill rat ;
Rat won't gnaw rope ;
Rope won't hang butcher ,
Butcher won't kill ox ;
Ox won't drink water ;

Water won't quench fire ;
Fire won't burn stick ;
Stick won't beat dog ;
Dog won't bite pig ;
Piggy won't get over the stile,
And I sha'n't get home to-night ! "

BUT the cow said to her, " If you
will go to yonder haymakers, and
fetch me a wisp of hay, I'll give you
the milk." So away went the old
woman to the haymakers, and said :

" Haymakers,
give me a
wisp of hay ;
Cow won't give
milk ;
Cat won't kill rat ;
Rat won't gnaw rope ;
Rope won't hang
butcher ;
Butcher won't kill ox ;
Ox won't drink water ;
Water won't quench fire ;
Fire won't burn stick ;
Stick won't beat dog ;
Dog won't bite pig ;
Piggy won't get over the stile,
And I sha'n't get home to-night ! "



BUT the haymakers said to her, " If
you will go to yonder stream, and
fetch us a bucket of water, we'll give
you the hay." So away
the old woman went.
But when she got to the
stream, she found the
bucket was full of holes.



So she covered the
bottom with pebbles and
then filled the bucket
with water, and she went
back with it to the hay-
makers, and they gave her a wisp of
hay. As soon as the cow had eaten
the hay, she gave the old woman the
milk ; and away she went with it in
a saucer to the cat. As soon as the cat
had lapped up the milk :



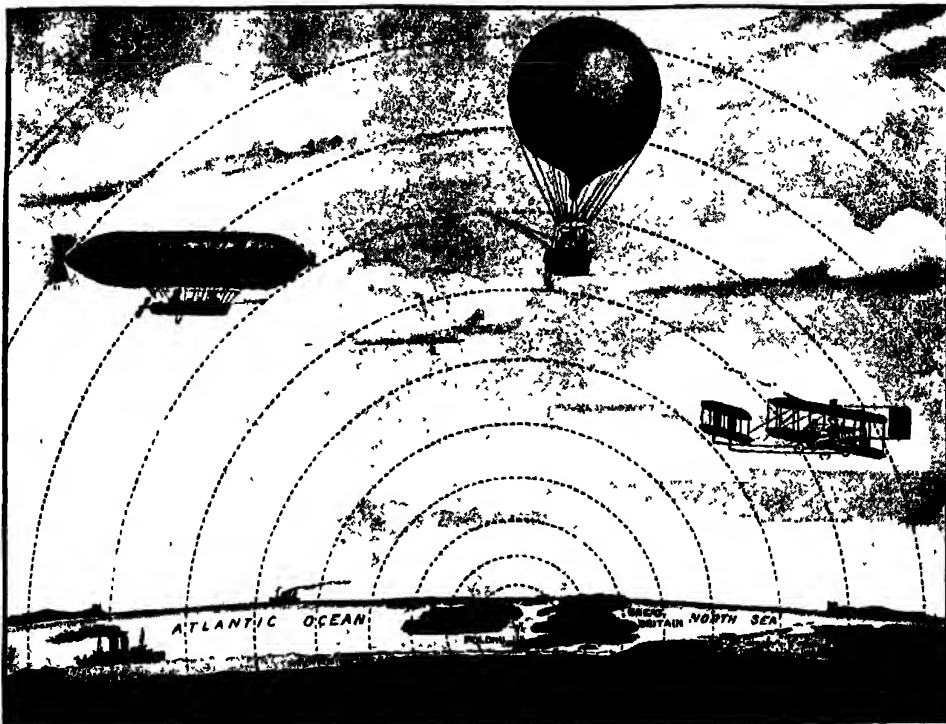
The cat began to kill the rat ;
The rat began to gnaw the rope ;
The rope began to hang the butcher ;
The butcher began to kill the ox ;
The ox began to drink the water ;
The water began to quench the fire ;
The fire began to burn the stick ;
The stick began to beat the dog ;
The dog began to bite the pig ;
The little pig in a fright jumped over
the stile ;

SO the old woman got home that
night !



CONTINUED ON PAGE 6085.

HOW WORD-WAVES TRAVEL EVERYWHERE



This picture shows us in a diagram the wonderful way in which the electric shocks travel through the ether. The wireless waves radiate in all directions, so that in less than one-sixtieth of a second a dot of the message, shown here as being sent from Poldhu, could be received in London, Norway, Berlin, America, or on any ship sailing on the Atlantic Ocean. It is to prevent everyone receiving everyone else's messages that the instruments are tuned. The message could also be received in airship, aeroplane, or balloon at thousands of miles above the clouds if men could get there. It is also believed that they descend into the earth.



This picture shows us, in another way, what we see above—how the wireless waves radiate, expanding evenly in true circles. The boy has thrown a stone into the river, and the waves flow outwards, getting fainter and fainter the farther they get from the spot where the shock occurred. The wireless waves are waves in the ether very like these water-waves, with this difference, that while the ripples of water travel only in a horizontal direction all round, and at a slow rate, the wireless waves travel at a very rapid pace, and in all directions. A better illustration of how these electric waves travel is provided by the light from a lamp or candle. The light-waves move from the flame in every direction, and the wireless waves travel through the world in exactly the same way from the centre at which the message is sent off.



WHY THE WINDS BLOW THE GALES THAT SWEEP ACROSS THE SEA

WHEN we look at a weather-vane we can tell from what direction the wind is blowing. The revolving part of a weather-vane has much more surface at one side than it has at the other and the side with the bigger surface is blown away from the wind. Thus the smaller part is at the side from which the wind is coming. Arms are generally fixed to the stem of a weather-vane, and at the end of these arms are the letters N., S., E., W., indicating the four directions of north, south, east, and west. If the arrow of the vane or the head of the weather-cock points north, we know that the wind is blowing from that direction.

It is easy enough to read the weather-vane, and it will perhaps suggest a number of other interesting questions.

Why, for instance, does the wind blow at all? Why does it not always remain still, as it does sometimes in summer? Why does it sometimes blow gently, sometimes strongly, and sometimes rage in a hurricane? Why does it blow sometimes from the north, sometimes from the south, and sometimes from the east or west?

CONTINUED FROM 5696



Finally, why do some kinds of wind bring some kinds of weather, and other kinds of wind bring other kinds of weather?

The science of wind and weather is called *meteorology*. The word comes from two Greek words meaning "to raise beyond." The word *meteor* now means only a fragment from another world that comes flying into our atmosphere. But formerly meteor had a wider meaning. Anything connected with the atmosphere was called a meteor, and so the science of the weather became known as meteorology.

Now we come back to the first question: Why does the wind blow? For the same reason that smoke comes out of a chimney. That is a curious answer, but it is correct. The real cause of the wind is that air expands and rises as it becomes hotter. If we take an empty bottle, stop its mouth with a cork, and place it in front of the fire, either the cork will pop out or the bottle will burst. The air inside the bottle wants more room.

Now, the sun shines upon this world and heats the air in certain

parts. The warmed air, being lighter than cold air, rises; and cold air, being heavier than warm air, rushes in to fill up the place which the warmer air occupied before it began to rise. That is the reason why the wind blows, given as simply as it can be given.

Generally, a breeze from the sea begins to blow on to the land a few hours after the sun has risen. Again let us ask—why? Land becomes warmer than water under the heat of the sun, so the air on the land rises, and the cooler air from the sea blows in to take its place, only to be warmed in its turn, and to allow more cool air to blow in from the sea. When the sun has set, the land becomes cool more quickly than the sea, so that the air above the land is denser, or heavier, than the air above the sea, and the cooler land air blows out to sea to replace the warmer sea air that is rising because it is warmer.

WHY ARE SOME WINDS WARM AND SOME COLD?

Winds become like the surface of the earth over which they travel. A wind which blows over a hot, dry desert becomes hot and dry; a wind which blows over ice-fields and snow-clad mountain-tops becomes piercingly cold; a wind which blows from, or over, the sea is likely to bring rain.

Whatever wind may blow, it has its cause in the inequality of temperature and heaviness in the atmosphere. Nature strives for equality, and warm breezes and cold blasts are Nature's way of equalizing matters.

WHAT ARE THE TRADE WINDS?

The trade winds are so called because, in the days before steamships, these winds were really the "drivers" of the world's trade, being the only power which enabled the ships to travel along the great highways of the ocean. The trade winds are winds that are always blowing from the Poles towards the Equator. But in going towards the Equator the trade wind that comes from the Arctic regions does not blow directly south, and the trade wind that blows from the Antarctic regions does not blow directly north.

The reasons for this are interesting. The earth is always revolving, carrying the air along with it. Thus the air at the Poles is revolving with the earth and

at about the same rate as the parts of the earth near the Poles are revolving. As the winds proceed towards the Equator, they go always into parts of the world that move faster than the parts near the Poles, just as in top-spinning the widest part of the top moves more quickly than a spot nearer the centre.

The winds that have come from nearer the Poles do not at once acquire the faster speed, so that the earth beneath them revolves faster than they do, and therefore they come to be not north and south winds, but north-east and south-east winds. The trade winds are most pronounced in the Pacific and Atlantic Oceans, because there is almost no land surface to modify them in their passage.

WHAT IS A WHIRLWIND?

In some parts of our country the whirlwind or cyclone is much dreaded. The whirlwind is caused by winds coming from opposite directions at the same time. When such winds meet, they make a circular motion with great violence, and, being pressed on by more wind coming behind, may be driven upwards with such force that at sea they may lift a column of water with them, thereby making a waterspout.

At times terrible gales sweep the sea. Before the days of steamships, sailors used to look forward with dread to the autumnal gales. Often they would battle with the elements for days together.

The sails would be torn to shreds by the fury of the wind. The mighty, foaming seas would charge upon the ship like an invading host, throwing themselves with terrific force upon the decks, and sometimes carrying away the masts. The gales are not such a danger to shipping as they once were, for nowadays steamships are independent of the wind for their motive power, and so they plough their way doggedly through the boisterous sea until they reach the desired port.

WHAT IS A HURRICANE?

The word tornado means turning, and from this we may readily see that it is a kind of whirlwind. It is caused by the air becoming so hot that it rises with frightful rapidity. This causes a sort of vacuum which the air all round rushes in to fill. As the air is carried up it becomes cooler, expands, and forms a

cloud, which spreads itself outward in the sky so that the tornado looks like a huge funnel hanging from a heavy black cloud. The force of the mad dance of the currents as they meet carries the tornado onward, and its appearance as it whirls along its path of destruction is terrific. The motion of the currents usually commences close to the ground, but a tornado may be carried along some distance up in the air. The speed with which it moves is so great that it sweeps everything before it; but happily it takes a much narrower path than a whirlwind does, and as a rule it does not last long.

Tornadoes are most frequent in the Mississippi Valley and in the southern states.

WHAT IS A CLOUD BURST?

A cloud burst is also caused by a whirlwind. Sometimes the currents of hot air which rush up from the surface of the earth are met in the upper regions by a current of cold air. When this happens the moisture which the hot current has carried up from the ground rapidly becomes condensed and falls to the earth again in a sudden deluge of rain. This is called a cloud burst.

IS IMPURE AIR LIGHTER THAN PURE AIR?

We are prone to be misled on this point, for other things affect the weight of air besides the kind of stuff that is in it; and one of the most important of these things is its temperature. It is true that in a room or church or theatre the impure air is lighter than the pure air, and therefore it ascends. But though this is true, it is not true that impure air is lighter than pure air. The impure air made by human beings or animals, or by fires, gas-jets, lamps, or candles, is hot because it is made by the process of burning, whether inside our bodies or outside them, and that process produces heat. Now, the hotter the air is, the lighter it is.

But if we were to wait until this impure air had cooled we should find that the impure part of it was heavier than the air. The most important gas in impure air is carbon dioxide, and this is heavier than ordinary air of the same temperature. Thus, in caves and mines where carbon dioxide is formed, it always tends to lie as low as possible.

This is a fact which every miner knows; and it is a very interesting experiment to lower a lamp down an old mine, or a well, and find that when it has dropped a certain distance it goes out because it has reached the level of the carbon dioxide.

DOES CHANGE GO ON IN OTHER WORLDS?

We know from our study of the surface of the earth that in the course of long ages it has changed very much. But men have been inclined to suppose that the skies do not show any change except in the position of the stars. However, when we study the sun and the planets by means of powerful telescopes, we find that all sorts of slow changes are going on in the heavenly bodies. Perhaps sun-spots need not be counted, as they come and go, and no one can say that there is any evidence of any changes in the sun going on steadily in one direction. But there is no doubt as to changes in at least two planets, Jupiter and Mars.

On the surface of Jupiter, the giant planet, there is a curious marking called the great red spot; and during the years that this has been watched it has certainly shown changes in shape and size and color. They are, indeed, much quicker than the changes on the earth that happen at the present time; but the surface of Jupiter is much hotter than the surface of the earth, which has mostly become set and rigid, while on Jupiter the surface is more fluid, and, indeed, so hot that it probably gives out some light of its own still. As for Mars, it shows many changes both in large features and in small. Considerable areas of Mars, which must once have been ocean-beds, are now certainly dry.

WHY DOES YEAST MAKE BREAD RISE AND BISCUITS BUBBLE?

Yeast is a simple kind of living plant which produces a substance called a ferment, that has the power of causing certain chemical changes in sugar. When yeast is used to make bread, the results all follow from the fermentation of sugar. Sugar is an extremely complicated substance, containing three kinds of atoms—carbon, hydrogen, and oxygen. When it is fermented the sugar is partly burned—that is to say, the ferment takes a certain amount of oxygen from the air and adds it to the sugar, which is decomposed and turned

into something else. If anything made of carbon, hydrogen, and oxygen is completely burned, the result will be carbon dioxide from the burning of the carbon, and water from the burning of the hydrogen. In this case the burning is not complete, but still a good deal of carbon dioxide is formed, and this makes the bubbles which form in the dough, and cause it to rise. A good deal of it escapes into the air, but much is caught, and so the bread is made.

The other thing which results from the fermentation of the sugar is alcohol, which is also a compound, though a much simpler one, of carbon and hydrogen and oxygen. For this reason the process we have been describing is usually known as the alcoholic fermentation of sugar. Practically the whole of the alcohol flies away into the air and is lost.

WHAT IS THE DIFFERENCE BETWEEN A FRUIT AND A VEGETABLE?

In ordinary talk we usually make a distinction between fruit and vegetables, but most people could scarcely say what the difference really is. All living creatures are divided into two great classes, animal and vegetable, and every kind of fruit belongs to the class of vegetables.

Still, though an apple or a strawberry is just as much a vegetable as a cabbage or a potato, we can find a distinction between them. Indeed, students of plants use the word fruit in a definite way. Many kinds of plants do not produce a fruit at all, but all the higher plants do, even including the greatest trees. The fruit of a plant is that part of it which contains the seed. Indeed, the fruit and the plant exist in order to produce the seed; when we study the history of the fruit we find that it always comes from the flower. The purpose of the flower is to form the seed; and then the flower disappears and we have, instead, the fruit, which holds the seed for its destiny.

Thus some of the things that we usually call "vegetables," such as tomatoes and cucumbers, are fruits in the proper sense of the word, because they bear the seed.

COULD A MACHINE GO ON FOR EVER?

This is a new way of asking the old question whether men can find what is called "perpetual motion," though that

phrase is not good to express what is meant. The whole universe is a perpetual-motion machine. Formerly many men thought they saw signs that the universe is running down, like a clock that was once wound up, and that in time all motion will end. But men see now that when motion disappears it has been turned into something else, and that the motion can be got out of it again. Therefore we believe that all motion is perpetual, for motion is a kind of power and no power is ever lost, though it may be changed.

When we say that perpetual motion is impossible, we mean something very different. We mean that we cannot get work from power and still have the power which did the work for us. It is never possible to get something for nothing. If a spring is to drive a clock it must become less tight, and then it will need winding again. The power put into it when the clock was wound has gone in the motion of the clock, and perpetual motion is impossible, in the sense that we cannot spend power of any kind and at the same time keep it.

WHAT IS GREEDINESS?

People often say that children are greedy, and should be ashamed of themselves. Now, children, and grown-up people too, may often be very hungry, and then will eat a great deal and perhaps very quickly. The question is whether there is any difference between being greedy and being very hungry. There is a difference, and a very real one. When we see anyone eating dry bread, however much or ravenously he eats, we do not say that he is greedy. We simply say that he must have been starved, and is very hungry.

We say that a child is greedy when he wants to go on eating, not because he is hungry, but because he likes the taste of highly flavored food like cake and rich Christmas pudding and candy. This is not hunger at all, for a child or a grown-up person may greedily eat far too much of such things just after a good meal.

This is really the craving of the nerves of taste, and is an utterly different thing from hunger. We are right to call it greed, and to regard it as unworthy. Some grown-up people are often just as greedy as children, though usually not so

much for sweets as for other highly flavored foods.

WHAT WOULD HAPPEN TO A PENNY IF IT GOT BEYOND THE PULL OF THE EARTH?

The law of gravitation states that every portion of matter throughout the universe attracts every other portion of matter. Therefore, however far a penny might go in any direction, it could never be beyond "the pull of gravitation." Wherever it was, it would be attracting, and attracted by, all other matter in the universe, including the matter that forms the earth. But a penny might be imagined as going so far that the force of the earth's gravitation might not succeed in pulling it back again, because the attraction of some other body might be more powerful. If there were no other heavenly bodies, gravitation would, of course, bring the penny back to the earth.

Where the penny would go would depend on its direction. It might be drawn into the moon. If it passed farther away it might be drawn into the sun, or into Jupiter. But sooner or later it would almost certainly pass near some large heavenly body, and be drawn into it. Its actual fate would depend on the force with which it left the earth, for if this were just right, the penny might travel round the earth as the moon does, or form a new planet revolving round the sun.

WHY DOES THE COLOR RUSH FROM THE FACE WHEN WE ARE FRIGHTENED?

Plainly the reason why the face of a frightened person is likely to turn pale must be found in the circulation of the blood, which usually gives the face its color. If at such a moment we had our finger on the large artery which beats at the wrist, and is generally called the pulse, we should notice that the beats had suddenly become few and irregular. It is the heart that is beating too slowly, not strongly enough to force the blood along the arteries to the skin.

We may wonder how fear can actually reach the heart and affect its action. The answer is, that there runs down the neck, on each side, from the brain to the heart, a remarkable nerve, called the *vagus*, or wanderer, because it goes to so many distant places, and one of its duties is to run to the heart and carry orders from the brain. When we turn

pale from fear, what has happened is that the brain has sent powerful orders through the vagus nerve to the heart, nearly making it stop beating altogether.

WHAT MAKES PEOPLE FAINT?

When a person who has been standing up suddenly turns pale, sways, and falls to the ground, it is plain that something has happened to stop the working of his brain. Perhaps we forget that our brain must be working all the time, and that if it stopped for a moment we should certainly topple over. That is what happens when a person faints; the brain-centres which control the balance of the body, and those which give orders to the muscles of the legs, cease to act.

We can guess the reason of this if we remember that the face of a fainting person is always pale. This gives us the hint that the supply of blood to the head is defective. The heart is not sending enough blood upwards, and so not only the face but the brain becomes pale and ceases to work. All nerve-cells require a continuous supply of blood, or they will cease to work. There is no other kind of cell that so quickly exhausts its nourishment.

We may go farther back and ask why the heart is not sending enough blood to the head. Many reasons are possible. Too much blood, for instance, may be going elsewhere, the heart may be weak or poisoned by our breathing foul air, or the blood may be too poor in quality to do its work properly.

WHERE DOES OUR WARMTH COME FROM?

As we talk of warm clothing we might think that our warmth came from our clothes; but, if we think a little, we shall agree that our clothes, at most, can only keep in the warmth, which comes from somewhere else. Sometimes, it is true, our bodies get warmth from something outside of them, from the sun, or a fire, or in a hot bath. But we should be very badly off if we had nothing else to depend on for keeping up the heat of our bodies.

We make our warmth ourselves, and it all comes from our food. Almost everything we need as food can be burned if it is dried, and, though it is certainly not dried in the body, it can

be burned there. The foods which burn best outside the body are those which furnish most of our warmth inside it. Such foods are fats and oils, sugar and starch. If necessary, our warmth can be got from the burning, inside the body, of such foods as meat and white of egg; but this is a very wasteful way of getting it, and, indeed, the reason why we take such foods as fat and sugar is to save the others and to supply the warmth of the body in the safest way.

Of course, all burning requires oxygen, and half the credit of producing our warmth belongs to the air we breathe.

WHAT MAKES THE NEW ELECTRIC LAMPS SO BRIGHT?

During the last few years the small electric lamps used in houses have become much brighter without costing more for the electricity that we use. This is because a new kind of material has been employed in making them. In all incandescent electric lamps, the principle is to send an electric current along a very thin wire which is kept away from the air. The wire is so thin that it offers great resistance to the flow of the electricity, much of which is turned into heat, and makes the wire glow. If the wire were exposed to air it would quickly burn away, but the lamp is carefully made so as to contain practically no air. If the glass is broken the wire burns and snaps in a moment.

The brightness of the light depends largely upon the particular material of which the wire is made. The feature of the new lamps, now so much used, is that, instead of having a carbon wire, they have a wire made of one or other of three rare metals, named *osmium*, *tantalum*, and *tungsten*. The last appears most satisfactory, but the wires are very fragile and often break. This difficulty will, no doubt, be overcome.

ARE HIGH HEELS HARMFUL?

No doubt many people wear high heels to their boots and shoes without much harm. The human foot is beautifully made for its purpose. It has a wonderful arch, which is elastic, and can give a little, and then rebound when pressure is placed upon it. This gives the spring and grace to the walk of people whose feet are in good order. But when people wear high heels they

alter the line down which the weight of the body passes through the foot to the ground. Instead of passing down behind the arch of the foot, it passes through that arch, so that people who wear high heels cannot walk naturally, and tire of walking much sooner than they otherwise would.

It is believed that, in some cases, people may hurt their brain and nerves by wearing high heels, for every step means much more of a jar to the body than if the shock were taken up by the spring of the foot. Then, again, people who wear high heels, and throw the weight of the body too far forward along the foot, are likely to have corns and ingrowing toe-nails, and to get the joints of some of the toes made very stiff.

DOES A FISH DRINK?

If any living thing is completely dried, it either dies or else it stops living until it gets water again. All living things must drink in one way or another. We know, also, that the water taken in is quickly spoiled, and a fresh supply must be had; a man may go without food for forty days, but he cannot go without water for ten.

Fishes drink, and fishes that live in salt water must drink salt water. But we must not suppose that fishes are drinking when we watch them in an aquarium and they look almost as if they were gulping the water. Fishes require not only to drink but also to breathe, and as they live under water they must breathe by means of the oxygen which is dissolved in the water in which they live.

When we watch them they are breathing by passing water through their gills, which serve them for lungs. The water that passes through their gills yields up to their blood the oxygen they want, but this water is not drunk. When a fish drinks it takes water in by its mouth as we do.

WHAT DOES SOWING WILD OATS MEAN?

In Denmark in the north of Europe, the Danes call the heavy vapors which steam from the earth just before the season of vegetation *Loki's Wild Oats*; when the fine weather comes they say: "*Loki has sown his wild oats.*" *Loki* is the evil being of the North.

THE BOOK OF WONDER

We might ask ourselves if this is the origin of the phrase about a foolish and extravagant young man "sowing his wild oats." Perhaps it is; but there is something very interesting to be learned about real wild oats. It is said that if we take a head of these wild oats in a moistened state, and lay it carefully on a table, the next morning we shall find that it has moved some distance away. It is like a rolling stone.

The spike or these oats is exceedingly hard, and does not "give," like the ordinary spike of oats and barley; and so it comes about that the weight of the ears overbalances these sharp-pointed spikes, and the head of grain goes tumbling and rolling over and over, like a stupid young man who cannot settle down to good steady work.

DO OUR EYES MAGNIFY?

The real meaning of the word magnify is to make larger, and if we remember this, we must see at once that our eyes do not magnify. When we look up and see the sun or moon or a star, we are looking at a thing so huge that our bodies are nothing at all compared with it, and the image of that thing upon the curtain at the back of our eyes is tiny compared with our bodies.

If we think of an eye, and the size of it, and then think of the fullest possible extent of the curtain at the back of it, we shall understand that, of course, our eyes do not magnify. A thing magnifies when it makes the image of an object larger than that object itself. A microscope does that. It may take a thing so tiny that our eyes unaided cannot see it, and yet throw on our eyes an image as large as that thrown by the sun when we look up into the sky. In such a case it is not our eyes which have done the magnifying.

Many insects have eyes which are of a quite different pattern from our eyes, and which look as if they must really magnify. If they are to do so, they must be used as a microscope is, with the lens—whether a piece of a glass or a part of a living eye—extremely close to the object that is to be looked at. If we use our own eyes for objects placed so near as that, we cannot see anything at all, for our eyes are not made for that kind of vision, but are

really meant for use at considerable distances. That is the use which tires them least.

WHAT ARE SUN-SPOTS?

Sun-spots were first seen by Galileo, in 1609, over 300 years ago. These dark spots have now been examined not only by huge telescopes, but also by having the light from them studied separately in other ways. An American astronomer has found what sun-spots are.

They are a sort of magnetic storm in the gases that make the atmosphere of the sun. Those in half of the sun always twist in the opposite direction from those in the other half—as is the case also with movements of the air upon the earth.

The light from sun-spots, when examined, is found to have been affected by a special kind of force called magnetism; and that is one reason why we know that sun-spots are really a sort of magnetic storm of a special kind in the sun's atmosphere.

Magnets on the earth are affected by sun-spots; and it may be that there is also a close connection between sun-spots and our weather—or, perhaps, not so much the weather as it is from day to day, as the climate over several years. We know that sun-spots regularly increase and decrease in number every eleven years.

But we must not say that the sun-spots move the magnetic needles on the earth, or change the weather. Whatever is the cause of sun-spots—perhaps something not in the sun at all—causes at the same time sun-spots on the sun and magnetic disturbances on the earth.

WHY DOES ELASTIC STRETCH?

We know that many kinds of material made by living beings have properties which are not found anywhere else. The secret must lie in the way in which the little molecules, as they are called, that make up the elastic are connected. All we know as yet is that, for molecules, they are very large and complicated, and are probably linked together in a very complicated way. We must distinguish between the stretching of a thing like elastic, which flies back, and the stretching of, say, putty, which never flies back.

WHY SHOULD A METAL COFFEE-POT BE BRIGHTLY POLISHED?

An efficient housewife wishes to serve her guests with hot instead of cold coffee. The metal of a coffee-pot is a good conductor of heat and is of the same temperature as the coffee. If the heat is radiated as fast as it is conducted by the metal, the coffee infusion will lose heat rapidly to supply the metal with heat to take the place of the radiated heat. A rough surface is made up of countless microscopical valleys and hills whose total surface is from two to five times as large as the surface which has had its little hills broken off by rubbing and its valleys made less in number. A small surface radiates less than a large surface by just as much as it is smaller than the large surface. It is not possible, by paint or stain of any kind, to make the surface of a coffee-pot as small as if polished by the use of good muscular rubbing. Test this by placing on a table a smooth-surfaced pot of boiling water at a distance of about four inches from a thermometer, and repeat the experiment with a rough-surfaced pot. You will notice a marked difference in the action of the thermometer.

WHAT DO WE MEAN WHEN WE SPEAK OF A CALORIE?

If a person wishes good health, his food supply is one of the few things demanding constant attention. If one eats to simply satisfy his appetite, he makes an error. It is now well known that the human body calls for heat and for constructive material—iron, sulphur, carbon, phosphorus, etc. One may eat so as to obtain much heat and little constructive material; or he may obtain much of the latter and little of the former. The heat from food needed by the body is spoken of as 2,000 calories each day. Now a calorie is the heat required to raise the temperature of one gram of water one degree centigrade. We get an idea of the meaning of this expression if we learn from books that a calorie, when put to work, can lift one *pound* of matter to a height of 40.4 inches. Therefore 2,000 calories can lift one *ton* of matter to the same height. In other words, our heat requirement per day *must* be sufficient to enable us to do the equivalent of the work just mentioned. It is needless to mention that we use that amount of heat unconsciously. We should never eat more than we need, for the effect is much the same as would

be produced by putting too much coal in the furnace.

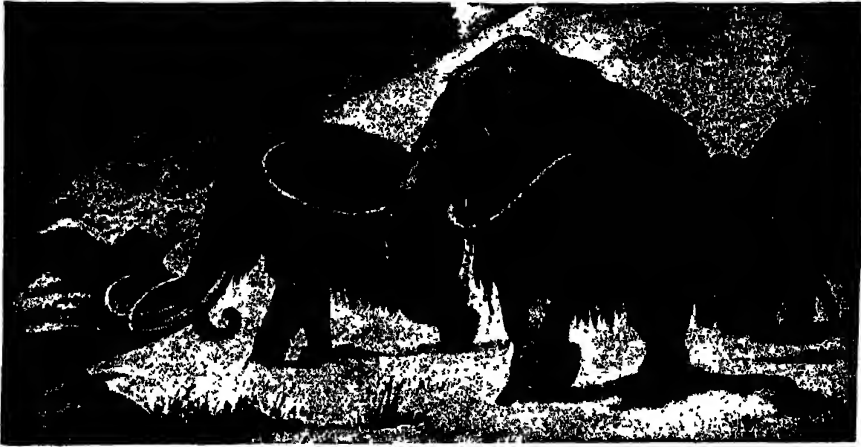
WHAT IS A BOND, AND WHY ARE BONDS NEEDED?

A bond really means the same thing as a band—something that binds or ties. When we speak of a bond, we mean that a man binds himself by a written promise to pay a certain sum of money. For instance, a man gives a bond that he will do his duty faithfully in a position of trust, such as that of a bank manager. Two of his friends, or a company, go surety for him, which means that if he should be tempted and do wrong the sureties will pay the bank a sum of money for which they have given security. If a man is accused of wrong-doing, he is often allowed his freedom, until his trial, if some one gives a bond that he will appear when called on.

The form of bond, however, of which you are probably thinking is such a bond as a railway company, or a gas company, or a town or city might give. When a city or town wishes to make improvements in the streets, or to erect new buildings, or if a company is about to build a new railway line or has to build a manufacturing plant, it issues bonds, that is, it sells its promises to pay back the money at the end of a certain number of years, and in the meantime to pay interest. These promises to pay are for a fixed amount of money, perhaps a hundred dollars, or a thousand, or five thousand dollars. The bond itself is a sheet of paper on which is printed or engraved the agreement about rate of interest, time of payment, and the like. Generally a number of coupons are printed on the sheet or attached to it. The coupon tells how much interest will be due on a date on which the bond promised that interest should be paid. Usually there is a coupon for every six months. If a company can not pay its debts, its property is sold and the bondholders are paid.

The nation sometimes borrows money on bonds. When we bought Liberty Bonds, for instance, it meant that we were lending money to the government, and in return we got a promise or pledge that the country would pay back the money at a stated time. The War Savings Stamp is a sort of baby bond, but interest on it is not paid until the government pays back the money spent for the stamp.

THE NEXT QUESTIONS ARE ON PAGE 6215.



Mammoths of the Glacial Age.

UNKNOWN ANIMALS

UNDER the lens of a powerful microscope a drop of water is seen to be teeming with living things. To the tiny creatures in it that drop of water is as an ocean, and to these living specks the larger forms of life in the water must seem as huge and terrible as hungry sharks in the sea are to human beings. That little drop of water looks to the eye as clear and free from life as if it had been distilled from dew upon the petal of some fair rose. That there is in it life of any sort surprises us; that there are so many living creatures there of varying forms and sizes is almost impossible to believe until the microscope enables us actually to see them. If that bead of water holds such mysteries, what of the world in which it has so small a part?

Let us walk around the garden, and, as we look across its sunlit odorous spaces, let us ask ourselves if there are in it any secrets hidden from us. There lie the lawns and flower-beds and kitchen-garden, looking solitary enough. Besides the birds there is not a living thing to be seen. We walk about the garden, and wish our parents had made us zoo keepers—a glorious life!—so that we might always have had beasts and birds and

CONTINUED FROM 5886



reptiles about us, instead of this tame garden with nothing in it but flowers, and fruit, and vegetables, and trees, and creepers, and shrubs. Cabbages do not satisfy the soul when we sigh for crocodiles; lettuces are a poor substitute for lions; nobody would be content with a geranium when he is panting for a giraffe, or express thanks for a tomato when he yearns for a tiger.

In this discontented frame of mind we wander up to the conservatory, and sniff bad-temperedly at the flowers there. Suddenly a little voice beside us says: "Look, here are some frogs in the tank!" Yes, there they are, merry little things, some of the four hundred frogs which we reared from the early tadpole stage in the previous year, and, to the great horror of somebody, turned loose in the garden.

There is joy in this evidence of life, and it sets us thinking. After all, is this garden such a solitude? Are there not moles, and mice, and voles in any number beneath its surface? Are there not more frogs in the long grass by the edge of the stream; newts in the moist borders surrounding the glass-houses, and possibly a toad or two down in the stokehole of the furnace which warms the houses?

Why is the gardener so carefully washing the leaves of the young celery plants? It is because the leaves are smothered with the eggs of the celery fly. The cabbages are studded with the eggs of butterflies; the ants are busy shepherding aphides on the rose-trees. Why are the young peas and strawberry plants so carefully netted off? To keep the mice away. Things look more lively now, and we are less ill-tempered. A great horny beetle, with a host of little ones clinging to it, scuttles across a sunny walk, and we remember that that beetle is one of a multitude of kinds which make their home in the garden. Down in the soil, we remember, there are myriads of insects and lesser creatures. Here is a garden of three acres or less. Well, in it there are quite half a million fine fat worms, all steadily at work making the soil better. And then there are myriads and myriads of microbes in the soil, all at work for their own benefit and ours; there may be as many as 400,000 to a single cubic inch of soil. Things are decidedly looking brighter. We can leave the zoo to



THE OKAPI, WHICH WAS DISCOVERED IN 1899
Specially drawn by Sir Harry Johnston

its keepers without further regret; we have got our own little zoo at home, all round us.

That is the sort of experience that any one of us can have. We go growling into the garden as into a place of solitude, quite lacking life, and find that, though we cannot see them, there are more living things in that garden than there are people in all the world. Now, the great zoologists feel at times as we feel. They say sadly to themselves, not that the world is without animals, but that it contains no more new animals, no animals with which they are not all familiar.

THE INSECTS IN THE WORLD TOO NUMEROUS TO COUNT

They know that they have not been able to fathom the sea, nor to classify all the insects and tiny forms of life, for that

no man will ever be able to do. There are more insects, both kinds and individuals, than most of us dream. That this is so we can prove for ourselves. Let us ask any of our friends which, in their opinion, would weigh the heavier—the backboneed things of the world, or the things without backbones? Ask them to imagine a gigantic pair of scales. In one side let them fancy that they put all the animals—men, elephants, rhinoceroses, hippopotamuses, lions, tigers, all the fierce animals, all the mild-tempered animals; the whales and seals and manatees, the sharks and all the big fish and little fish, and all the birds and reptiles and amphibians—put all those into one scale. In the other, put the insects of the world. Which, let us ask our friends,

will weigh the heavier? Our friends will say that the scale containing the backboneed animals will easily weigh the heavier. But in the judgment of great authorities, that is wrong; the little things are so many in kind and number that they will outweigh all the rest of the life of the world put together.

In this vast assemblage there are very many still to be discovered and known. But with the big things it is different. It is as to these that the zoologist grows sad. He has no new secrets to gain, he sometimes thinks. Then some splendid fact bobs up and kills his theory. He is not as wise as he thinks. There are more living things beneath the skies than he knows of. There cannot be very many more living things to be discovered, but not all the list of surprises is exhausted. It took years and years to find the little mosquito which carries disease and death to our countrymen who go out to tropical climates. The mosquito was there in abundance, but the brave men who were devoting their lives to the pursuit of it could not know that the mosquito was at work when they slept, and that when the men were awake the

A GIANT LIZARD MAY BE LIVING TO-DAY



The African natives are very emphatic in their stories that a fearful creature, half elephant and half dragon, inhabits the huge swamps of Northern Rhodesia, and Mr. Carl Hagenbeck, the great European importer of wild animals, believed that some creature like the prehistoric brontosaurus really lives in these dismal and lonely swamps. This picture shows what the brontosaurus was like, and the cross on the map marks the place where it is supposed to live. The word brontosaurus comes from two words that mean thundering reptile. See page 14.

evil insect retired to rest. That is a little instance of the way in which members of the great animal kingdom succeed, age after age, in escaping the notice of man.

A PIGMY RACE, THAT KNEW THE SECRET OF THE OKAPI

Think of it—for thousands and thousands of years Africa has had a beautiful animal called the okapi, yet up to the present moment only a few white men have ever seen one of these animals alive. Until a few years back, any great zoologist would have told us that he knew of all the animals in the Dark Continent; yet here, awaiting discovery, was one of the most interesting creatures in the world—the connection link between the giraffes and the gazelles. When it became certain that the okapi really lived, the American Museum of Natural History sent men out to find one. As you may read in another place, they succeeded in their task, and though they failed to keep one of these beautiful wild creatures alive, it is so well mounted, and its silky coat is so soft and glossy that you might almost walk up to it in the belief that it breathes.

The manner of our learning of such an animal was in itself a little romance. Fairy books and travelers' tales have often told us of tiny pigmy men and women, but nobody believed that such people existed. Dwarfs there have been in plenty, but no one believed that there really existed tribes of pigmies.

But such men and women have been discovered in the heart of Africa, and Major Powell Cotton, when he got married, took his young bride to stay with the pigmies; and the brave girl-wife dwelt in the midst of the tiny savages while her husband went off into the forest, hunting strange animals. She can never forget the wonder of these people when they caught sight of her brushing her hair. These little people were the only ones who knew of this strange animal in whose existence scientists did not believe. *They* knew all about its habits. They knew that it eats only one particular sort of food, which grows nowhere but in these forests. They knew how shy and silent and solitary it is; how the scent of a man far away from it will make it desert its feeding grounds and fly for safety deep into the dense undergrowth, where not even the pigmies can follow. But the little men knew that there are

moments when they can steal up to it, and inflict a deadly injury with the poisoned arrows which they use. These were the little people who instructed our wise and daring scientist-hunters that the wise men have not yet learned all the secrets of Nature.

It is worth remembering, too, that this same traveler of whom we have been thinking, stayed some time with cave men and women in Africa. He found men and women and children living in tribes of three or four or five families, clad in skins, and making their homes in rough caves, living exactly as our forefathers lived in savage old Europe, when the mammoth and the hyena and the cave bear were there to share the land with them. These facts help us to realize that not every vestige of the old, old world has yet passed; that there are things still for us to see and know—animals in the wilds of which we had not heard; tiny men and women in the forest like the pigmies of the story-books; men and women in caves like the ancient Britons; men and women and children and domestic animals amid the eternal ice and snow, living just the lives which men and women lived in the Ice Age.

Facts like these make the thoughtful student wonder whether there are not in the world still more relics of the past which, hiding in the wild, untrodden ways of mysterious lands, have not yet been seen by hunter or traveler. He cannot but wonder if the so-called extinct monsters really all died out, or whether there may not still be some survivors. Scorpions exist to-day in much the same form that they have had since scorpions were first created.

The duckbill, that wonderful animal with furry body, bird's bill, and paddle-like feet, with which it can swim in the water and burrow on dry land, lives to-day in Australia, unchanged from the form in which its ancestors, which were among the first of all animals, originally appeared. It took years and years to make men believe the stories which the natives of Australia told of this remarkable egg-laying animal; and when at last a white man found the duckbill, and learned the whole story of its life, he cabled home the news, and had it sent from England on to Canada with as much excitement as if a new continent had been discovered.

THE CURIOUS TUATERA OF NEW ZEALAND

Then we have the tuatera, a lizard living in the islands off the northeast of New Zealand, which has remained unchanged through ages since it first took its present form. Other lizards have changed enormously, but not the tuatera. There is a greater difference between the tuatera and the ordinary lizard than there is between the ordinary lizard and the serpent. The tuatera is the one creature on earth which still has three eyes. On the top of its head, under a fold of skin, which makes it useless, there lies that third eye, which all animals are said to have had at one time. In the young this can be clearly seen through the skin.

Now, inquiring naturalists say to themselves: "If these two creatures, together with the echidna, or spiny ant-eater, another practically unchanged animal, can have lived unaltered through all these millions of years, are there not some other animals still alive surviving from the old days?" And, believing that there is something in the theory, they go, or send men, into the wilds to find the answer to the question. One of the most exciting chases was one undertaken not many years ago to find the giant sloth of Patagonia. It had a body as big as an elephant's, and when it sat up on its mighty hind legs to pull down a tree-top to eat, it was fourteen feet high. These giant sloths were the animal lords of South America at the time when the mastodon and mammoth lorded it over North America. We cannot tell why they died out. One belief is that the enormous number of guanacoës, camel-like creatures which abounded in America, by constantly biting off the young

shoots of trees, killed all the forests in which the sloth lived. Goats killed the trees of all the hills of Greece and the plains of the Mediterranean countries, making all barren. Guanacoës may have done the same for that part of South America in which the sloths lived. That, however, would not explain the disappearance of the horse. There were once myriads of horse-like animals in South America, but when the first white man landed there, there was not a horse in the whole continent. These are mysteries for which we cannot account.



THE GIANT SLOTH

A few years ago a band of British hunters went to search for this monster in Patagonia, but were unable to find it. It is believed that it was tamed by primitive South Americans.

DOES THE GIANT SLOTH EXIST?

Anyhow, naturalists sent out an expedition, fully believing that somewhere in the remote parts of South America the giant sloth still exists. The expedition was not successful, but we now know that the great monsters lived in caves with men, and that men and women and children made pets of them; for after all these ages we find the very grass which the men cut for the sloths turned into withered hay, in the caverns. It is not now believed that any of these strange animals are still in existence.

We got all our news about new animals from natives, therefore we are bound to pay attention to stories which come again and again to us from natives occupying quite different parts of the same country. The natives' tales of pigmies and cave men, of the okapi and of the duckbill, were long disbelieved; but, as we have seen, they were true. This fact weighs with the men who believe that there may be truth in the marvelous stories which are told of a fearful monster living to-day in the swampy heart of a great part of Africa, called Rhodesia, into which it is impossible for white men to penetrate.

A STRANGE ANIMAL THAT MAY BE ALIVE IN AFRICA

The story was first heard from natives in Africa a good many years ago, by a trustworthy traveler named Menges. It came up again some years later when Carl Hagenbeck, the great importer of wild animals, received two different reports to the same effect. One of his own hunters, who had been in Rhodesia in search of animals, heard of it; and an English traveler, who had entered and left Rhodesia by a different route from that taken by Mr. Hagenbeck's representative, also heard of it. The natives described it as a huge monster, "half elephant, and half dragon," dwelling in the great swamps in the interior, which are hundreds of square miles in extent. There are drawings of such an animal in certain caves in Rhodesia, which suggests that the natives either have wonderful imaginations, or have actually seen such a creature. We know that in olden times they made drawings on stone and ivory, and on the walls of their caves, of reindeer, bears, mammoths, and other animals then living, and we find skeletons of the animals they drew, mingled with the remains of the men who scratched the pictures on the walls and on ivory.

Mr. Hagenbeck believed that such an animal as this monster might be found in the great and silent swamps of Rhodesia, and he sent an expedition to hunt for it. The hunt failed, for the men were laid low by terrible fevers, and attacked by bloodthirsty savages. Although he failed on this occasion, Mr. Hagenbeck, in a book that he wrote, called "Beasts and Men," said that he hoped yet to prove that this animal does exist. He thought it must be like the extinct brontosaurus. This was an animal sixty-five feet long, and weighing over thirty-five tons. It fed on the vegetation of swamps, and lived half in the

water and half on land; which, of course, is just the sort of life that would be led by this monster of which the Rhodesian natives tell to-day. Monsters such as this, and others still more fearful, once wandered over all the earth. Some of them must have lived on for ages after man appeared. Traditions of these dreadful beasts were handed down for centuries of generations. Their echoes still come to us in stories like Beowulf and St. George and the Dragon.

There are those who hope that some day we shall find that the quagga, that relation of the zebra which is supposed to have become extinct quite recently, is not dead; that somewhere or other, two or three lurk secure and unsuspected

by the deadly hunters. Men still go wearily seeking the moa, the giant bird of New Zealand, fully believing that the natives are right when they say that here and there, in the heart of the New Zealand mountains, these feathered giants still live. The same hope animates those who believe that somewhere in the less frequented islands of the Indian Ocean a dodo or two may linger in safety. Perhaps the most romantic faith of all

is that of the men who hold that the mammoth still exists in the North. Indian hunters from time to time bring back reports that far up in Alaska, almost at the coast of the Arctic Ocean, a solitary herd of mammoths still lives and flourishes. New things do come to light. It is not many years since Europe saw for the first time a takin, an animal which comes between the goats and the antelopes. The animal is too big, one would have thought, to have escaped attention. It is three and one-half feet high at the shoulder, and has great horns, with which it can kill a man; but because its home is mysterious Tibet, a land into which, until lately, it was dangerous for Europeans to go, until recently it was unknown.



THE TAKIN, NOW IN THE LONDON ZOO

A creature from Tibet, was unknown until recently.

This photograph is by W. P. Dando, F.Z.S.

THE NEXT NATURE STORY IS ON PAGE 6061

THINGS TO MAKE AND THINGS TO DO



A GARDEN MERRY-GO-ROUND

ALL boys and girls love to ride on a merry-go-round, and perhaps some will be surprised to hear that a very good merry-go-round can be made and fixed up in the garden by any boy who is handy with tools; and what boy is not? Nearly every boy, too, has his own tool-box that he uses constantly.

We first of all get a stout post about seven or eight feet long and six or seven inches in diameter, or, if it is square, with sides of six or seven inches. Such a post can be bought quite cheaply at any lumber-yard, or a carpenter will get it for us.

We sink this wooden post about four feet in the ground, pressing in the earth well all round. The top of the post must be made quite smooth and level, and on it we balance a long, stout plank. This should be from eighteen to twenty feet long and two or three inches thick at least.

In the middle of the plank we bore a round hole sufficiently large for a bolt to go through. It is this bolt that will hold the plank down upon the upright post, while at the same time allowing the plank to work easily upon it. Of course, while the hole has to be slightly wider in diameter than the diameter of the bolt, it must not be so large that the plank will be able to slip over the head of the bolt. And we must remember as we bore the hole that the bolt itself will work out the sides, so that it can be quite tight fitting at first.

The plank is placed in position on the post, and a hole having been made in the post to receive the bolt, this is screwed or driven home, so that only sufficient is left above the plank to allow this to work round easily on the post. The bolt should be a long one, some twelve or fifteen inches in length, or it will work out of the post.

At right angles to the plank, and about three feet from the ends, pieces of wood should be fastened, as in the picture, to serve as handles, by which those riding upon the merry-go-round can support themselves.

(CONTINUED FROM 5923)

All that is needed now to make the merry-go-round quite ready for use is some soap for the top

of the pole, to go between it and the plank, and enable the plank to slide round easily.

The method of using this home made merry-go-round is obvious. Two boys or girls take their places—one at each end of the plank—and then, by using their feet as levers, send the plank round and round faster and faster; it is, of course, necessary to hold on firmly. There is more fun to be had out of a merry-go-round made in this way than even out of a see-saw.

If the merry-go-round is intended for big boys and girls, the upright upon which the plank is to work should be larger than that suggested at the beginning of this article. It should be twelve inches in diameter, and in fixing it in the ground it would be well to make some liquid cement and pour this round the post, leaving it to set. In this way the post would be held firmly in the ground, and not be likely to work loose.

Where there are many children who usually play together, the fun can be more than doubled, by making another plank cross this one at right angles. The two must be firmly bolted together—it is not wise to use nails as they are likely to pull out—by at least four bolts through both planks. By adopting this plan, four can ride at once, and as the merry-go-round flies around we seem to see only a tangle of arms and legs and hair, and the shrieks we hear show how much fun all are having.

Of course, this post and one plank can be used for a see-saw, as well as for the merry-go-round. When used for this purpose, however, the hole in the plank must be a little larger, so that the bolt will have plenty of room, or else our see-saw will not allow the plank to go down quite far enough. Also the sharp edges of the post should be rounded off, or else we shall find that the see-saw will bump as it goes up and down.

THREE THINGS FOR CLAY MODELING

THE familiar things appearing on this page are intended for clay modeling. They can be easily made from the instructions given here. They are intended to be carried out to a fairly large scale, and, instead of forming them out of spheres or cylinders, as we have done with plasticine, we shall build them up bit by bit to the required size on our slate.

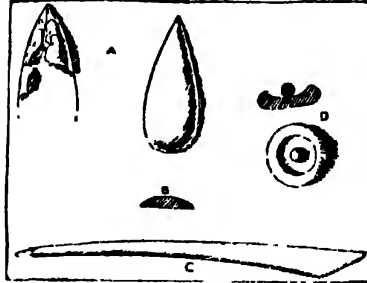
Let us take the first exercise—a simple rosette with four petals.

As we are making this a good size—say, eight inches across—we must not try to model the petals in the fingers and then lay them in position, for the work must look as though it were united to its background. It is to be definitely *seam-relief*, and this will not be the case if it is detached from the background

process. Working together, the fingers seem to help one another, and we can keep the outline even. On no account must the work look smeary and ragged in outline, and without great care and considerable patience it will very quickly become so.

"Take care of the edges" is an important rule for all stages of modeling, especially during the earlier stages of low-relief work. If there should be any tendency to smearedness, the edges may be cleaned up by the aid of a little wooden tool like the shape shown at c. This can either be bought for a few cents or it can be made with an ordinary

penknife and then rubbed over with fine sandpaper in order to make it quite smooth. Its use is chiefly to clean up the edges of



PARTS OF A ROSETTE



A ROSETTE

A BUTTERFLY

A BELL-PUSH

in the working. Secondly, it must look plastic—that is, it must have a modeled appearance rather than seem as if it had been "stuck on." Nor must we put a rough piece down and carve out the shape; it would scarcely be "modeling" under such conditions, and the result would be more suggestive of carving tools than of the pliable fingers.

To begin, mark with dots of chalk the positions of the extreme points of the rosette and lightly draw the shape of each petal, making the length about three and a quarter inches. We now break off little pieces from our lump of plasticine, and proceed to build up the topmost petal as at a in the first picture, preserving the outline as we press each piece into position. We shall find it a distinct help to use together the tips of both forefingers during this shaping

the work when they become ragged or smeared, and since its point is fine, to model up those parts which are inaccessible to the fingers. Build up each piece to the section a which suggests the proportionate depth, or thickness, and make the surface smooth. It is

well to revolve the slate while we model each petal, for we should have the point away from us during the process.

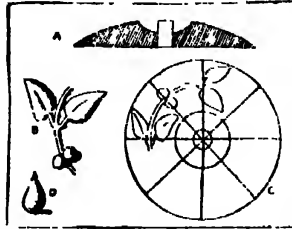
Having completed the four petals, we may make the centre by rolling a ball

and pressing it so as to make the hollowed disk, b. It should be sufficiently large to fill the central space. Another small ball is then rolled and placed in the centre of the depression.

The second picture shows a butterfly, which, though differing largely from the rosette, is built up in a very similar way.



PARTS OF THE BUTTERFLY



PARTS OF THE BELL-PUSH

MEASURING A TOWER WITH A LOOKING-GLASS

The head and body, *A*, should be modeled first to a convenient size, and we ought to have no difficulty with this, as we adopt the same method as we used in making the petals of the rosette. The upper pair of wings must next be done, and, having lightly sketched them in to a proportionate size, we build up the clay to the section shown at *a*. This section is taken right across the middle of the upper pair of wings. We must notice that *all* the wings are joined to the *upper* portion of the body, while the lower part is free of all attachment. We now proceed with the second and smaller pair of wings, a section of which is given at *c*.

The antennae are made from very thinly rolled strips, one end of each being curled up into a tiny ball as at *b*.

It is true that neither the antennae nor probably the butterfly itself would be quite this shape, but we must remember that we are decorators—for modeling is largely a decorative art—and decorators, like poets, take a certain licence in the treatment of their subjects. Our picture shows only a much simplified form of butterfly. There are, of course, many types. At *E* and *F* are shown sketches of one upper and one lower wing of a different variety, and we shall find it an excellent exercise to make a study of a real specimen.

The third model is an electric bell-push. On our slate we mark a circle of about four inches diameter, and in the manner already described we build up a disk on the section shown at *A*. This should be made smooth and free from all depressions, excepting, of course, the one at the top, in which the push is placed.

The actual hole through which the push passes can be ignored at this stage.

The disk finished, we have the problem of fixing on our ornamentation. This is quite a delicate process. First, let us look at the sketch of the ornament at *B*. It consists of simple leaves and berries on a continuous stalk. Now upon our disk we mark lightly with a fine point the position of this stalk, and also the positions of the leaves and berries. We shall see that there are four pairs of leaves and four pairs of berries placed at equal distances from each other. We obtain the positions by dividing the disk up into eight parts, as shown at *C* in the last illustration. The stalk is a thinly rolled-out strip, placed and gently pressed into position. The berries are tiny balls rolled in the fingers and then pressed into their places.

For the leaves, small pieces must be rolled into the pointed pear-shape shown at *D*. Each piece is then put in place, pressed, and carefully worked with the finger-tip and tool till it appears to be just a raised portion of the disk. Tiny strips are added for the leaf-stalks. These must be carefully attached to both leaf and main stem. In all fine work such as is required in this exercise the little tools we have introduced will often need to be used, for, however small our fingers are, there are some parts of our modeling to which they will be inaccessible.

To give the roughened appearance of the background it is only necessary to stamp it lightly with the end of a match or similar tool. The centre push is a short cylinder a little thicker than a lead pencil. A hole is bored through the centre of the disk to receive it.

MEASURING A TOWER WITH A LOOKING-GLASS

THERE are various ways of measuring the height of a tower or tree or house, but one of the simplest is by means of a looking-glass. We take the looking-glass some distance from the tower or other object which we wish to measure, and lay it on the ground, with the reflecting side upmost, as in the picture, where *A B* is the tower and *c* the looking-glass.

We then walk backwards farther from the tower, until we can see the top of it reflected in the glass. Next we have to measure the height of our eye, *D*, from the ground, *E*, the length of *E C* and of *C B*. It is rather hard to take our own measurement, but if we do not know it or if we have no friend with us, the best way is to notch a stick and measure it afterwards. Use little sticks to mark the positions of *E* and *C*, and then pace out or measure the distance with a line or a stick.

Now, in order to get the height of the tower, we simply have to work a sum in proportion.

As *C E* is to *E D* so is *C B* to *B A*. We know three of these measures, so that we can easily find the fourth. Thus, if the boy's eye is five feet from the ground, and



THE LOOKING-GLASS PLACED IN POSITION

he is standing six feet from the mirror when he sees in it the reflection of the point *A*, and, further, if the distance from the foot of the tower to the mirror is twenty-four feet, then the height of the tower is twenty feet. It is essential that the mirror be placed on the ground quite horizontally. If we have no looking-

glass, we can make a mirror by putting some water in a dark pan or tray, or even a natural pool can be used. In such cases we can move until we see clearly the reflection of the top of the tree or tower at the edge of the pool. Of course, a pool or tray of water can only be used for the mirror if there is not much wind.

PUTTING A NAME ON A HANDKERCHIEF

WE all know how very dainty and charming an embroidered initial makes a handkerchief, but only few of us may know how simply and quickly this little addition may be made. And yet a little patience, and a knowledge of two of the simplest embroidery stitches, are all that are needed to obtain the most delightful and pleasing results.

Let us suppose we have never done such work before, and see how to set about it.

To begin with, we must remember to choose a linen handkerchief and one which is not too fine. Linen is firm to work on, and is not so apt to pull and pucker as a thinner material, like cambric. It lasts much longer also, and we shall think our work all the more worth while. The next thing to consider is the initial itself. We cannot all draw well enough to sketch one ourselves, and it is not easy to find something suitable to copy from. A good place to search is on the title-page of a well-bound book. The letters on a title-page are designed by good artists, and are, as a rule, well proportioned and very clear. Old hymn and Psalm books are places in which to find really good letters.

There is a great difference in letters, and we shall, perhaps, have to search through several volumes before we hit upon exactly what we want. We must choose one that not only pleases us and has a pretty shape, but at the same time is not too much curved or over-elaborated. The first picture gives us an idea of five sorts of letters to choose. Any of these work out well. The letter should be of a fair size, for the smaller it is the more difficult it will be to work. One which measures from one-half of an inch to three-quarters is the best to start with.

When we have chosen our letter from the book, we transfer it to the handkerchief in this way. We get a scrap of tracing-paper, trace off the letter, and then blacken the back of the tracing-paper with a soft lead pencil.

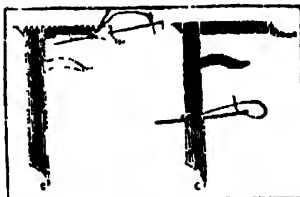
We lay the linen handkerchief on a drawing-board, and pin the corner out flat. Then we place the traced letter in position, black side down, of course, and go over its outline with a sharply-pointed hard pencil. We remove the tracing paper, and find that the blacklead on the back has allowed a faint outline of the initial to appear on the linen. With a very black and hard pencil we strengthen this outline, but keep it as fine as possible. Then we moisten the letter with

a sponge, and wait till it dries, or iron it dry. This process will more or less "fix" the lead-marks on to the material and prevent them rubbing off while we are working. A loose, soft make of cotton is best for the embroidery, one which is very little twisted. Several well-known brands are almost equally good for this work.



THE KIND OF LETTER TO CHOOSE

First comes the padding stitch, which can best be understood by looking at the second picture. We use the same cotton, and arrange our stitches in the up-and-down direction shown, taking care to place more in the middle than at the edges, where we turn them off. Then comes the filling stitch, which is shown in the same picture. This goes across in the opposite direction to the padding stitch, as can be seen in the picture. We make these very closely together, entirely covering the padding. It is important in this part of the work to follow the outline very carefully; a stitch that falls just short of, or over the outline will spoil the finish of the initial entirely. We should take care to keep the



Padding and filling-in stitches.

material held well down between the thumb and finger of the left hand as we go along, to avoid any puckering or pulling of the linen and turn off at the back neatly. We must also try to follow the pencil outline very faithfully.

If our thread gets at all twisted we must notice this, and at once turn the needle round several times in the opposite direction. The threads, if twisted, will not

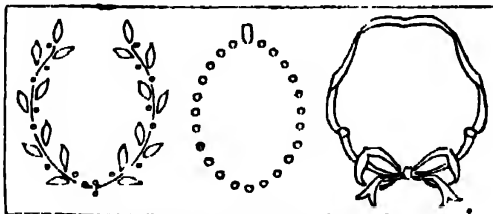
"bind" together and look smooth on the letter when finished.

The plainest letter will look well if neatly done, neatness and precision being the chief points in this work.

An excellent plan—

if we wish to make our design a little more handsome and distinctive—is to fit round the letter a little border or wreath such as is shown in the third picture. The little patterns are padded and worked in exactly the same way, of course, as the letters themselves.

One great advantage of giving a handkerchief to a friend for a present is that it is always most acceptable. No one can ever have too many which is not true of all presents.



DESIGNS FOR THE BORDERS

HOW TO LOOK AT WHAT YOU DRAW

THE BEAUTIFUL SHAPES OF THINGS

EVERYTHING in life is relative. One boy is spoken of as strong because we know another who is not so strong, or is weak. Every assertion we make is the result of a comparison, and our judgments will be valuable just so far as we have considered the unknown in the light of the known.

The ancient Greeks considered drawing and writing as essentially the same process, and they used the same word for both. And if Pharaoh wanted to proclaim that a hundred ducks were consumed at one meal in his Court he employed a draughtsman to register the fact on a frieze by picturing a row of cooks occupied in preparing the hundred ducks. Writing is then only a later development of

and the other shut out. When we wish to draw the one, we must watch the other. We are not interested in anything contained in the shut-out space, so that our minds are free to consider only the values and directions of the boundary lines. By watching the shut-out space we see the boundary lines of the enclosed space big and simple. Our interest finally lies with this the object. We draw an object by looking at the shapes of the spaces beyond it. An object makes a pattern with the background, and it is this pattern that we must draw. For this is what we call the music of shape.

Place a cardboard box upright on the table. Behind it put a sheet of white paper covered



A picture showing the beautiful harmony between a mass of buildings and the surrounding country.

A picture showing the simple musical shapes of a street scene.

drawing, which has its alphabet just as writing has.

We have found that the alphabet of drawing consists in the true lengths of lines coming against each other, and that the shapes enclosed correspond with the syllables of words or the phrases of music. We have seen that it is necessary to study a form before we can attempt to draw it. Drawing is recording facts we know. It is in its truest sense "memory drawing." We are not copying; we only refer to the object when we find that our knowledge of it is hazy. Our hands will do their work faithfully and beautifully if our minds are fixed upon realising *the whole*, and not dwelling upon details.

Boundary lines not only enclose shapes within them, but are division lines between surfaces. They belong to two sets of shapes, one enclosed

with upright lines, from one to two inches apart. Notice the position of the outer corners of the edges of the box in relation to the vertical lines—that is, that they are not all equally high. Mark these points on the background, and join them. The far edge of the table appears to touch the object one-quarter, perhaps, or one-third, from the bottom. Mark on the background the exact position, and draw the edge as it stands out from each side of the box. Darken the background beyond the box.

Let us step back and survey our work. We shall see the white box standing out against the darkened paper. If we remove the box we shall see its outside shape appear as a white space on the dark background, just what we saw when the box was there. Now let us examine this

drawing of the external shape of the box. First let us examine the values of its boundary lines. Which line is the longer—the line of the table or the line of the left-hand side of the box?

Are they of equal length? If not, how much is one longer than the other? A half, a quarter, and so on. In this manner compare the lengths of every line on the background, remembering that slovenly observation is of no value at all.

Now we will examine the shapes on the background. Let us turn to the left-hand side. We have here two sides of a shape given us; they are the edge of the table and the left

edge of the box as far down as the bottom of the background. Is it as long as it is wide? Is it longer, and, if so, by how much? That is, would it make a square or an oblong? Decide what the shape would be. Treat all the boundary lines in the same way, completing in imagination their suggested shapes. We must

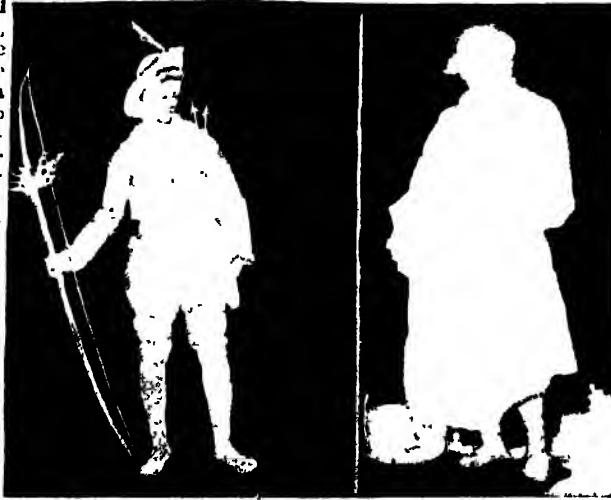
Every line is relative as regards its direction as well as its length. When we draw a line, we can judge its inclination accurately by looking beyond the object at something else which

has lines of whose direction we are quite sure, such as the vertical lines of the legs of desks, wall-panels, doors, and window-frames. So now do away with the striped background, and glance beyond the object you are drawing to see how much the direction of its boundaries varies from the vertical of some known upright line.

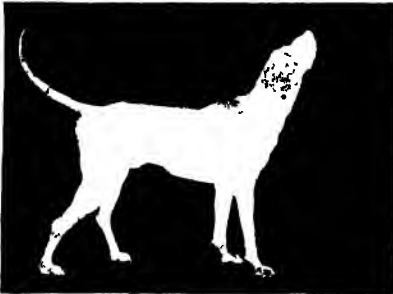
In this manner picture on your paper other objects, such as an open box, chairs, and toys.

Place several of them together to make a group, and draw the pattern it forms upon the background. Then make a second drawing, and fill in the internal details, shape against shape.

Take a spray of privet, and place it before a sheet of white paper. Draw this on



Pictures showing that the attitudes of figures are best expressed by their simple, beautiful shapes against their backgrounds.



Pictures showing the musical shapes, or patterns, which objects and their backgrounds make.

always ask ourselves if the completed background shapes would make a square, an oblong, or a triangle, wherever a space appears beyond an object or a group of objects. We must look from one to another, and judge their relative values—their values, that is to say, as they compare one with the other.

When we have drawn these background shapes, we find that we have the perfect external shape of the object before us. It is far more truly represented than it could have been had we looked at the object while we were attempting to draw it.

Mere mechanical, *mindless* copying is impossible when drawing in this way. During the whole time we are judging and finding out the different values of the shapes. They are no longer prisoners waiting to be judged: they are becoming friends. Each must receive from us quiet and courteous judgment.

tinted paper with white crayons. Fill in the background with the white crayon, or draw it with pencil on white paper, and fill in the leaves. Now we have before us dark patches on a white ground, which are just like the dark leaves in front of the white paper. Look carefully, and compare the shapes of the background between the leaves. We might mark them one, two, three, and so on, beginning with the largest or with the smallest. Call the roll of these soldiers without fear or favor. Draw other sprays of leaves and flowers in the same way. Where several leaves overlap, draw the shape of the mass, not the separate leaves.

Let us try to tell another exactly what kind of music was in the heart of the architect when he planned the houses opposite to us. To do this we must not look at the details on their fronts, but at the sky-line, and note the

AN EASY-MADE SHELTER

shapes made on the sky background. If they are all alike, the music is monotonous; it is the broken sky-line, with its variety of shapes beyond, that gives us such pleasure when we visit old-world towns and villages.

So let us carefully compare edge with edge of the shapes of the sky beyond the buildings, and decide what each shape would make if completed. Draw these, and fill in the background neatly with white crayon, enclosing the whole as in a frame. Make a picture of it. Our buildings are now standing out as a dark mass against the light sky.

As we walk into town, or ride on the top of a tram or bus, let us look at the sky-line before us. We notice what a broken line it is. We see church spires standing above the rest of the houses like stately lilies among the lower garden plants, or a beautiful town-hall with its turrets and towers and gable windows.

As we look down the streets where the sky-line is evenly broken, our eyes soon refuse to dwell on them. We are glad to look up to the sky where the shapes are more varied and the music more joyous. Let us glance from the monotonous sky line down to the houses below; we find them built all alike. There is very little that is happy or musical about them, whereas we find that the houses which

had beautiful shapes against the sky have also pleasingly-shaped windows and gables.

We now know how to read the story that is written on the face of the sky. When we visit another town, we shall know more of the people of that town than they think they are telling us. We know either that they are telling everyone that they love this beautiful music of shape, and will have it about them; or else that they have either never heard of it, or do not care about it. Ugly, unmusical surroundings make us unhappy and miserable. This is not right; we are meant to live joyous lives. We want our towns and villages to be beautiful, and we now know wherein this beauty and music lie. By dwelling in the City Beautiful, our own work, too, will be beautifully done.

PLAY LESSON

Draw the sky-line of the streets near your home. Draw every one through which you love to look. You will soon find out why they attract you. Make a picture of your school: you may find that it is a beautiful building. If we look out of the window as night is coming on, we shall see the houses as a dark mass cutting against the lighter sky. Draw these as you see them.

AN EASY-MADE SHELTER

IF we are out scouting or camping, and wish to make quickly a shelter in which we can sit and rest, at the same time being shielded from wind or rain, this can be done quite easily. We stand three branches together in the same way as soldiers stand their rifles when they are resting, and of course, if the ends of these branches are forked, they can be supported against one another all the more securely. Then, leaving an opening in front, as seen in the picture, we pile up small branches and brushwood round the uprights, pressing them closely together, until we have a shelter like that shown.

By sitting in this we can get protection from rain and wind, provided, of course, that we make the opening face the direction opposite to that from which the wind is blowing. Another way to make

use of branches and brushwood if we are caught far from camp on a canoeing trip, is to draw up the canoe and tightly pack it with soft leafy branches, leaving only enough space for the body. Great warmth can be thus obtained. In open country and wooded districts, branches and brushwood are always accessible, and to build a shelter like this is the work of a very few minutes. It is also very useful as a shady nook.

A clever boy can, from this picture, get an idea for a little shelter that is well worth building as a permanent resort in the garden. If straight branches be selected to pile up against the uprights, and they be fastened with tarred string, a little summer-house will be formed that will prove useful and at the same time, so far from looking unsightly or crude, will have a neat, rustic appearance.

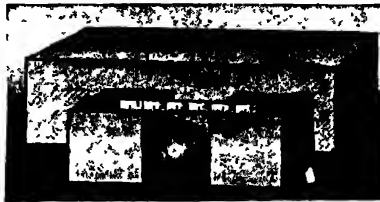


The shelter complete.

HOW TO MEASURE THE DIAMETER OF A BALL

TO measure the diameter of a ball exactly may not seem a very easy task, but there is a way of doing this which is quite simple. Take two blocks of wood, or two boxes, a little higher and wider than the ball, and stand these on a table with their sides pressed flush against a wall or against a larger box standing on the table. In between the two boxes or blocks place the ball as shown in this picture, and still keeping the

sides flush against the wall, bring the two boxes together until they touch the ball.



All we have to do now is to take a rule and measure the distance between the two boxes, taking care of course, to keep all the objects quite still and level. With the diameter thus accurately measured, we can obtain the other dimensions in the usual way as, for instance multiplying the diameter by

3.1416, or, roughly, 3 $\frac{1}{7}$, to get the circumference

A GARDEN GROWN ON A WALL

THERE is many a naked and unsightly wall in town and country that might, with little trouble, be beautifully draped in Nature's garments of restful green, with patches of blue and red and yellow. Some of the most pleasant memories of those who have traveled in England are the walls of the old cloisters long since fallen into decay. No one who has been in Peterborough can ever forget the walls around the cathedral there. There are some old walls in New England which are equally beautiful.

Some walls, of course, have their covering of Virginia creeper, and, in the proper season, their thick and gorgeous mantle of sweet peas or nasturtiums, but the roots of these plants are in the ground, and it is not always convenient to have a flower-bed at the foot of the wall.

A WALL COVERED WITH BLOSSOM

Far more interesting than any such covering as has been mentioned is a real wall garden, with plants actually growing on the wall, and if we will take a little care with this novel garden we can get a rich harvest of blossom from early spring right through to late autumn.

The best kind of wall for a garden is an old stone wall, from whose joints the surface mortar has crumbled and fallen and made crevices into which the roots can find their way and take firm hold. We can prepare the wall by knocking out joints and corners of brick to make little artificial pockets here and there where we wish to have our plants.

All along the top of the wall, too, we can form pockets by planing rough stones together, so as to leave recesses for the mold. Holes made with a chisel, even, are large enough for plants to take root in. The pockets must be filled with damp soil.

We do not need rare and expensive flowers for our purpose; in fact, we can cover our wall with familiar wild flowers. If, however, we decide to have some of the cultivated varieties of flowers, it will be best for us to raise the seed in a greenhouse, and then when the roots are well formed to plant out on the wall. This is done by lifting the whole plant with the little mass of earth that is held together by the roots, and pressing it down into the moist soil in the crevices or pockets of the wall.

PLANTS FOR SUNNY AND SHADY WALLS

Of course, in selecting plants for our wall garden, we must take into consideration whether the side on which the garden is to be is warm and sunny or whether it is in the shade most of the day. For the sunny side some of the dwarf campanulas, or bell-flowers, are excellent. The wall campanulas are particularly suitable. Rock pinks and other hanging-plants like *cerastium*, *alyssum*, *aubretia*, *arabis* and *gypsophila*, which, though they grow happily on the level, do best when they use the upright wall out of which to hang.

Seeds and cuttings should be planted in a light soil in June, and placed on the wall as

soon as ready. The sedums or stonecrops, and the *sempervivum*s or house-leeks, are also good. Snapdragons and Iceland poppies are all very useful flowers for a garden, and wallflowers are, of course, particularly suitable and effective, as those who have seen the cloister walls of Peterborough Cathedral in spring and early summer well know. These walls are literally a blaze of golden color.

On the shady side the yellow *corydalis* is easy to grow, and is very pretty with its dainty foliage. Garden primroses and anemones are thankful for a place at the cool wall-foot. London pride, too, looks charming when grown in the wall with its dainty cloud of pink bloom puffing out from among fern-frond masses. The mossy saxifrages, and many of the hardy *piennas* or primroses can also be grown.

Many alpine plants will grow on an old wall, on the sunny side stone crops large and small, and a variety of many-colored *phlox*.

But beautiful and interesting as the wall garden is when covered with flowers supplied by the nurseryman, it is still more interesting and quite as pretty when all the flowers that grow upon it have been collected by us during our rambles.

WILD FLOWERS FOR THE WALL

Among the sedums we should secure biting stonecrop, which is very common on rocks and sandy ground; English stonecrop, which is found in similar places near the sea.

Some of the toad-flax family will flourish in a wall garden. The ivy-leaved toadflax, or mother-of-thousands with its delicate foliage and trailing stems with myriads of blue or white blossoms is a very charming plant for a wall, and the common yellow toadflax, better known as "butter and eggs," will also grow well on a wall, as many of us can testify.

One of the most showy and handsome wild plants for a wall garden is the red valerian. It is often grown as a garden flower, and will thrive nowhere better than on an old wall.

The money-wort, or creeping jenny, with its trailing stems, shining leaves, and bright yellow flowers, is a plant that no wall garden should be without, and has become naturalized in America. It blooms from July to September.

Willow-herb, or golden loosestrife, the wild pinks, the sea pink, the early saxifrage, the purple mountain saxifrage, the yellow mountain saxifrage, the wild hop, the white arabis or rock-cress, viper's bigness, and the yellow alyssum are all familiar wild flowers that are easily found and excellently suited for a wall garden.

Some may prefer to cover a shady wall with ferns, and certainly small ferns look nowhere better than when growing in such a position. Many varieties will grow on walls, at the foot could be grand tufts of hartstongue with its cool pale fronds to foster the feeling of shade, male fern and osmunda. A little higher up maiden-hair spleen wort and the common Christmas fern would do well.

CONTINUED ON PAGE 6077.

A STORY-DICTIONARY IN ENGLISH & FRENCH

DICTIONARY

Ability means power.

Au-delà means beyond

Bedouins are a tribe of Arabs who live in the desert.

Beverage means a drink.

Common means general, for the use of all.

Conclusion means end, finish.

Conduisit is the past of **conduire**, to conduct, or to lead.

Couvertures means covers.

Custom means way of living and acting

Defend means to guard, to protect.

Employment is the present of **employer**, to employ, or to use.

Exhiba is the past of **exhiber**, to exhibit, or to produce.

Firearms are weapons that are fired by gunpowder, like pistol.

Guest means visitor, a friend staying with us

Hookah pipes are pipes with long tubes, smoked through water.

Hospitality means the receiving of visitors generously and kindly

Laine means wool

Mieux means best

Nous voilà means there we were

Privilege means an advantage or pleasure enjoyed by some particular person

Prolong means to extend to make longer

Reclined means leaned, rested.

Recounting means telling over again

Se coucher means to go to bed.

S'enveloppa is the past of **s'envelopper**, to wrap one self up

Sous peu means in a short time.

Tous les deux means both of us.

Traient is the present of **traiter**, to treat

Utmost means the highest, the furthest extent

Vinrent à notre rencontre à cheval means came to our meeting or to meet us--on horseback

A VISIT TO ARABIA

Frank had been on a visit to Arabia, and he was *recounting* his experiences to some of his school friends.

"They don't live in houses in the desert," he told them, "but in great tents, and as soon as they saw us coming the old *Bedouin* and his little son, *Hamid*, rode out to welcome us.

"*Hamid* is a fine little fellow. I don't suppose he has ever played football or cricket in his life, but he is a splendid shot. Their life is so different from ours that Arab boys are taught to *defend* themselves when they are quite little, and they would rather play with *firearms* than with any toy you could give them.

"The *Bedouins* are famous for their *hospitality*. While you are their *guest*, they serve you to the *utmost* of their *ability*; but you are not expected to *prolong* your visit after three days, and when you leave they pass you on to some other friend.

"But I think you see the strangest of their *customs* at dinner-time. We all sat on rugs round a low table, and on the table was a great dish, from which everyone helped himself with his fingers—for they don't use knives and forks in Arabia."

"There was plenty to eat—goat's meat and rice, hot cakes, fresh fruit, and the most delicious coffee. The Arabs are very proud of their coffee, and it is the *privilege* of the eldest son to pound the berries for the father to make into a *beverage*.

"When I was ready, the old *Bedouin* picked out a choice bit of meat and put it into father's mouth—because he was the chief guest—and then each one helped himself out of the *common* dish.

"At the *conclusion* of the meal the men *reclined* on cushions, and smoked long *hookah* pipes, and when bedtime came *Hamid* took me over to his corner of the tent, and brought out a couple of blankets. He gave one to me, and rolled himself up in the other, and before long we were both sound asleep."

UNE VISITE EN ARABIE

François avait visité l'Arabie et racontait ses aventures à quelques-uns de ses camarades de collège. "Ils ne vivent pas dans des maisons dans le désert," leur disait-il, "mais sous de grandes tentes, et aussitôt qu'ils nous virent arriver, le vieux *Bedouin* et son jeune fils, *Hamid*, *vinrent à notre rencontre à cheval*.

"*Hamid* est un beau petit garçon. Je suppose qu'il n'a jamais joué ni au football ni au cricket de sa vie, mais il est bon tueur. Leur vie est si différente de la nôtre, que l'on apprend aux jeunes Arabes à se défendre quand ils sont encore tout petits, et ils préfèrent jouer avec des armes à feu qu'avec tous les jouets que vous pourriez leur donner.

"Les *Bedouins* sont fameux par leur hospitalité. Pendant que vous êtes leur hôte ils vous *traitent* de leur *mieux*, mais votre visite ne doit pas se prolonger *au-delà* de trois jours, et quand vous partez ils vous passent à quelque autre ami.

"Mais je crois que vous voyez la plus étrange de leurs coutumes à l'heure du dîner. Nous étions tous assis sur des tapisseries autour d'une table basse. Et sur la table il y avait un grand plat dans lequel tout le monde se servait avec ses doigts—car ils *n'emploient* ni couteaux ni fourchettes en Arabie! Il y avait beaucoup à manger—de la viande de chèvre et du riz, des gâteaux chauds, des fruits frais, et le plus délicieux des cafés. Les Arabes sont très fiers de leur café et c'est le privilège du fils aîné de broyer les grains dont le père préparera le breuvage.

"Quand tout fut prêt, le vieux *Bedouin* choisit un morceau de viande qu'il mit dans la bouche de mon père—parce qu'il était le premier hôte—et puis chacun se servit dans le plat commun. Quand le repas fut terminé, les hommes se reposèrent sur des coussins, et fumèrent leurs chibouques, et quand vint l'heure de *se coucher*, *Hamid* me *conduisit* à son coin de la tente, et *exhiba* une paire de *couvertures* de laine. Il m'en donna une, et *s'enveloppa* dans l'autre, et *sous peu* nous voilà tous les deux dans un profond sommeil."

In this picture of a village common there are a number of people shown; in addition to those whom we can see clearly, there are a number of others indicated by something they are holding, by part of their body, or in some other way. Look at the picture and see how many people you can discover. There are fifty-six, if you find them all.

The Book of OUR OWN LIFE



This gives an idea of how the blood flows through the liver to be purified on its way to the heart. The great veins subdivide into smaller, which become finer as they go through millions of cells.

THE KITCHEN OF JACK'S HOUSE THE WONDERFUL CHEMISTS AND THE WORK THEY DO

AS we know, Jack's wonderful house is a three-storied one, but it is raised from the ground on Jack's legs, like the houses we see in some places in the Far East; and so his kitchen, or ground floor, is some distance from the ground, and "rises in the world" as Jack's legs grow longer.

This kitchen, which is really the lower part of Jack's body, contains many things which Jack would die without, though most of us have never heard of them. All this is perfectly true, and almost new; and there is so much to learn, that for many years to come, the progress of science in finding out how to repair Jack's house, and in knowing how best to build it up, will largely depend on what we are now learning about various things in Jack's kitchen which have been despised hitherto.

Perhaps the strongest of Jack's many strong points is the number of clever chemists he keeps working for him. As long as he lives they are busy all the time making things which Jack's house could not do without, and which make all the difference to Jack himself. We already know that Jack himself lives in his study in his

CONTINUED FROM 5906



top story, his observatory. The ordinary way of saying this would be that the mind lives in the brain, for, of course, Jack's mind is the boy himself.

One of many new discoveries which have been made is that all sorts and parts of Jack's house are constantly engaged in providing special materials which reach Jack's brain, and make all the difference to it and to him. So true is this that there is, for instance, half-way up the stairway between Jack's top and middle stories, something called the *thyroid*, without which Jack would certainly be an idiot. All of the wise people who study the brain intelligently know that they must study the body too; for it is true that the house a man lives in will often make a great deal of difference in the sort of man he is.

Thus, for instance, there are two small private chemical laboratories in Jack's kitchen which we know now are the workshops of clever chemists without whom all the work of Jack's house would stand still. When we find a private chemical laboratory in Jack's house we call it a gland, and we find many thousands of these glands everywhere—those

that make the sweat, those that make the saliva, and hundreds more. The little glands in the kitchen lie pressed one to each kidney, and they are called the *adrenal* glands, or adrenals, which simply means "to the kidney." The common rule is that the various laboratories in the body have a tube, or duct, running from them and carrying whatever they make to wherever it is wanted to go. Thus little ducts run from the salivary glands to the mouth. But these adrenal glands, like several others found in different parts of the body, have no ducts.

THE OLD THINGS IN JACK'S HOUSE THAT HAVE LATELY BEEN DISCOVERED

These glands are called the ductless glands, and they have long been a puzzle, and some people have declared that they are nothing but a sort of lumber, which Jack had inherited from some of his ancestors, who lived in a different style from his own, and had use for such things which Jack has not. This idea, that Jack's house is an old curiosity shop, full of rusty and battered relics of Jack's forerunners, has something in it, but a great deal less than many people have supposed; and there are a good many things which have been called useless heirlooms of Jack's which are a great deal more necessary to him than his stomach.

The ductless glands are a case in point. The blood runs through them, and in the case of some of them as it leaves them it carries something which it had not before, and which makes all the difference to Jack. Where that is not so, the blood which comes away is without something which was in it before; and that something is poisonous or dangerous rubbish, which the chemists in the gland have destroyed, usually by burning it up.

THE TUBE THROUGH WHICH POWER COMES TO THE MUSCLES

The adrenal glands belong to the class which make things, and the thing they make was discovered some few years ago by a Japanese scientist, Doctor Takamine, in New York, though another man found it out about the same time. The thing they make is carried throughout Jack's house, and its business is to give power to all those servants of Jack called the muscles. Without this wonderful substance the muscles cannot do their work, the blood is not properly

pumped into Jack's study, and that means that the ventilation is impaired and Jack gets drowsy and stupid, as we should expect. The working of his brain becomes changed, a doctor would say, because of lack of the adrenal secretion. If the lack continues, Jack dies. This happens in rare cases, when certain microbe burglars break into these glands and smash them, killing the chemists and taking their places.

These are the smallest of the special glands in Jack's kitchen, but in this whole house there are none more important than these tiny bodies, for Jack's life depends upon them. The adrenals lie pressed against and above the renal glands, or kidneys. We all know that the kidneys are the laboratories where the chemists who filter the blood, keeping Jack's water-supply pure, are constantly at work.

Only a short time ago we believed that these laboratories were practically just automatic filters, like those we are accustomed to use for keeping the water-supply of our houses pure. But we know better now, for we have discovered that not only are the cells of the kidneys alive, but they are wise and skilful, and the work done by the kidneys is living work, not mechanical. The kidneys are laboratories, containing clever living chemists, upon whose good work Jack's happiness depends. If these chemists are not working well, Jack is "not quite himself," as we say.

THE TINY CHEMISTS WHO MUST NOT BE OVERWORKED

People might say that it does not much matter which way we look at all this. But if you think a minute you will see that it does matter, right thinking always does matter in the long run. If the kidneys were nothing but a sort of grating or sieve, we need not fear as to their behavior; but if they contain living chemists, then those chemists can be overworked, like anyone else, and if they are too long overworked they will get weary and become ill, just as any other living thing would. In time they will not be able to work at all. A few years ago doctors used freely to give as medicines all sorts of things which were known to make the kidneys work harder—thinking this only meant that the blood would be filtered through them more quickly than usual.

But now we know it means that the tiny precious chemists will be overworked; and the new rule is to give nothing to add to their work when they are in difficulties, but to simplify what Jack eats and what Jack does, and so lighten the work of the chemists until they can recover. This means giving far fewer medicines, which is what the best doctors are doing nowadays. And the same is true of every day, for people are learning that if they overeat they are overworking the chemists in their kidneys who deal with all rubbish.

THE LARGEST LABORATORY

Many times bigger than both the kidneys and both the adrenals put together is the largest laboratory in Jack's house, called his liver. We all know that our happiness and health largely depend on the faithful and skilful chemists in this laboratory, and somebody who was asked: "Is life worth living?" gave an excellent answer with a double meaning: "It depends on the liver." Now, this laboratory is in many ways unlike any other. In the first place, it is huge compared with the others. Its business requires it to deal with all the blood in Jack's body, and to do so at a great rate. All the millions of millions of cells, or chemists, that make it up appear to be exactly the same, and to do the same work if there is need, and from one point of view they are by far the cleverest cells anywhere in the body, because all of them can do so many different things.

For instance, they store up iron for Jack's use, and fat for him to burn as fuel, so that this laboratory is also a larder, a filter, and a fireplace too, as we shall see. They catch or filter and melt down the old red cells of his blood, which are the porters, each carrying a little portion of air for ventilating Jack's house.

THE GREAT FIREPLACE IN JACK'S HOUSE

In this and various other ways the liver cells produce a stuff called bile, which has all sorts of uses, *in its place*, but is very undesirable when it gets into the blood, for then it makes Jack bilious—that is, bile-full—and unhappy, and bad-tempered, and yellow-eyed. However, when we have said all this and much more about what the liver

does with the blood, we have left out the most important of its duties.

The adrenals contain the chemists who just make a few drops of something powerful and precious. The kidneys contain the careful and discriminating chemists who pounce upon bad things in the blood, and filter them away. The liver contains chemists who pounce upon the bad things in the food, and burn them up. Note that the burning up serves two purposes—a very common trick in Jack's house. It destroys dangerous things, and it keeps Jack's house warm.

But now as to the poisons in Jack's food. The liver is so placed that all the blood running from Jack's bowel, with the food it has picked up there, must pass through the liver before it reaches Jack's great central pump—the heart, from which it is pumped to every part of Jack's house, and especially to Jack himself. None of Jack's other laboratories are in such a position as this; only this huge one is placed on the line of route, so that every speck of food, however well cooked, except only the fat or oil that is to be used by Jack, must pass the test of the chemists in the liver.

THE SENTINELS WHO GUARD THE WAY TO JACK'S LIVING-ROOMS

Now, the liver may be called the great gate, or portal, inside Jack's house, through which everything must pass before it is admitted to the master's apartments. There are houses in many parts of the world built round a courtyard; and things may drive into the courtyard and be in the house and yet not actually in the house. Now, that is the case with the stomach and the bowel, and with the great gateway, with its chemist-sentinels and furnaces, which is always guarding the way to the master's living-rooms. Thus the proper name for this gateway, or portal, is the *portal system*.

Without it Jack would be at once overcome and killed by the poisons in his food. No matter how clever the hall-porter is, no matter what the teeth may do, no matter how clever the cooks who work Jack's ovens, quantities of subtle poisons pass into the blood from the food, and would overpower Jack in a very short time if it were not for the fiery test they have to pass in his portal

system. But there the liver-chemists stand, and throw into the fire all that they can of the unsuitable or dangerous stuff brought to them by the blood. We find also that the same is true here as of the kidneys. We can overwork these faithful and unflinching chemists. They will go on till they drop.

But the time perhaps will come when these chemists are overcome; sometimes because of some powerful poison which kills them on the spot. But usually it is just a slow wearing out, due to excess of work with too little time for rest—and this is most likely to come when Jack himself is taking too much rest and doing little work!

That is what happens when people steadily eat too much, especially of rich, heavy, highly-flavored, unnatural foods, crammed with poisons—especially those people who do little or no muscular work and take none of the exercise which is so bracing to the liver-chemists. For a time all goes well, and we see no harm, for Jack's own rooms are not penetrated, and the chemists stick to their work and give no sign. But the time comes when these faithful servants fail to do their tasks, and then Jack's end is near, for he can neither do without them nor find others to do their work.

WHY NATURE MEANT JACK TO BE A TEETOTALLER

The commonest injury done to the liver is by alcohol, as everybody knows; but it is only within the last ten years that we have learned why alcohol does so much more harm than many other things which the liver seems able to deal with easily. The fact is that alcohol, being an entirely unnatural thing in the food, puzzles the liver. The chemists can make little of it, and what they do, when it reaches them, is to send back again in the bile as much of it as they can, while some of what is left slips through their hands and gets into Jack's private rooms. When the bowel gets the alcohol again, it quickly sends it back to the liver; and we now know that this may go on for days, and all the time, of course, the bowel and the liver are being injured. Several other poisons do the same thing as alcohol, getting on to a circular route from which they can only leak away with difficulty; but of all poisons not naturally occurring in the

food, and thus not naturally prepared for in the body, alcohol is, of course, the commonest.

Quite as much might be said about the *pancreas* as about any of these other laboratories. It is a wonderful gland, for it has two kinds of chemist-cells, one kind making a fluid which runs through a tube to the bowel, where it performs very useful work; and another kind—far fewer in number—behaving like the adrenal chemists, and giving to the blood some mysterious product which enables Jack's furnaces to burn up the sugar in the food.

THE BRAIN OF THE KITCHEN OF JACK'S HOUSE

Then there is the great telephone exchange, lying behind the stomach, which specially controls the whole of Jack's basement, and is in a large measure independent of the three exchanges in his top story, of which we have already told you. This exchange is often called the brain of this part of Jack's house, so important is it.

We know what Jack's stomach is for, and how it receives food and drink from Jack's front door by means of his "red lane," and how it sends on the food, partly cooked and digested, to the bowel, a tube many feet long, which the blood visits, and from which it carries the food away to the liver. Some of the food can not be used, and is left in the bowel, and the liver sends a messenger to move this and other rubbish along and also to kill any bad microbes which have slipped into his house.

THE WONDER THAT CAN NEVER BE TOLD

The stomach and the bowel are studded everywhere with wonder. The stomach has millions of skilful chemists, who are also cooks. Too many cooks do not spoil the broth in this case, for Jack has billions of them in all. The cooking done outside Jack's house is only the beginning; and there is no kitchen in the world to approach Jack's, and there are no waiters like the white cells of the blood.

Such are a few of the wonders of Jack's ground floor. Not a thousandth part of what the wise men know has here been told to you; what we know is not a thousandth part of the whole, nor could the whole ever be told.

CONTINUED ON PAGE 6107.

The Book of STORIES



THE FIRST MEN IN ENGLAND A TALE OF THE DAYS OF LONG AGO

SWAR was the first baby ever born in the land now known as England. His father, Wawa, was the leader of a tribe of savages living across the river which divided the country from what is now France. There was no English Channel in those days, but only a broad, deep stream running between low banks of chalky ground. Wawa had often swum across it, and returned home with a string of rabbits hanging from his shoulders; for food was growing scarce in France, and the green jungle on the English side of the river was full of game.

One bitter winter, when the tribe was starving, Wawa crossed the river and returned with a young fat deer. It was then that the tribesmen, after some discussion, decided to move to the other side of the stream. At first many of the women refused to go.

"The river is too deep and swift," said Bina, the wife of Wawa. "The children will either be drowned or killed by the wicked loughorns."

By the loughorns she meant the fierce rhinoceroses which then lived in English waters. For England at that time was very different from what it is now. The land was a wild

CONTINUED FROM 5916

green jungle, haunted by stealthy and terrible lions, and great bears, and fierce wolves. Reindeer, horses, sheep, and oxen roamed in wild herds in the open places, and now and then a troop of hairy elephants came crashing through the forest. In the reedy rivers herds of gigantic animals snorted and splashed.

"There is no danger," said Wawa. "The men can easily swim with the children on their backs, and you women can carry the tent-skins." "And who will carry the fire?" said Bina.

To this question Wawa could not find an answer. It was clear that the tribe must carry their fire with them. Few savages in those days knew how to make fire quickly, either by striking sparks from a flint or by twirling a stick of hard wood in a hole made in softer wood. Most of the tribes got their fire from volcanoes and burning forests, or from some race who had already obtained a tribal fire from these natural sources. Sometimes they had to go far to find it, especially in winter time, but never before had they been forced to carry it across a stretch of water.

Time after time he made a great torch of firwood, and tried to swim the river so that he could light a fire with it on the other bank ; but the torch always went out before he reached the shore. At last, as winter was changing to spring, he thought out a plan.

"We must make a large raft," he

a small hole in the trunks of the trees, and in these holes kept fires lighted until the bottoms of the trees were nearly burnt through. Then one wild night a storm of wind came and sent the oak-trees crashing to the earth.

The tribe danced around the fallen trees, and feasted far into the night. It



The tribesmen, after some discussion, decided to move to the other side of the stream.

said, "large enough for us to carry fire on."

He chose three great oak-trees, and the tribe set about felling them. The only tools the tribesmen had were rough, blunt stones fixed into cleft sticks. With these flint axes it was impossible to cut down a great tree. So Wawa thought of another plan. The fire should help them to build rafts to carry itself across the water ; he hollowed out

was the first time they had been able to fell great forest trees, and the sense of a new power filled them with pride. Everybody was now eager to cross the great river and settle in the new land where food was plentiful.

It took six weeks for the tribe to make a raft capable of carrying their precious fire, and their little babies, and the skins they used for tents. Axe after axe was broken in lopping off the large boughs.

The women took the blunted flints and sharpened them. They worked in pairs. One held the flint in both hands on an anvil-stone; the other woman sat on the other side of the anvil and struck rough flakes off the flint with a stone punch and a stone hammer. Their work was rough, and their tools were little better than sharp flints found by the roadside, yet they were human tools, and with them they got the wood for the raft ready by the middle of April. This was a good time to start, for roots were pushing up in the woods, and birds were coming back from the south. There would be food, and soon there would be shelter. They had no nails to join their raft, but they fastened the larger pieces

together with long strips of reindeer skin, and bound the smaller sticks with willow twigs. Then they lined the middle of the raft with clay, and when this was dry they lighted a fire on it, and, with long poles, steered their flaming vessel across the stream. They were nearly overturned by a rhinoceros, but the smoke blew into the face of the monster and frightened him off.

"Ho, ho, ho!" shouted Wawa, as he moored the raft by the English bank. "That's the first time old Loughorn has seen a fire on this water, and he doesn't like it at all. Ho! ho! ho!"

The men made a clearing on some high ground by the river, and put their fire in the centre of it. Then they brought their babies and tent-skins across on the raft, and the older children and the women merrily swam after them, and

began to busy themselves with setting up the first village in England. Four rough stakes were fixed in the ground, four poles were lashed to their tops, and over this structure the skins were hung.

"How many tents shall we put up?" said some of the tribesmen to their chief.

"One man," replied Wawa.

By this he meant twenty huts. The tribe were not good at figures. They had words only for the first four numbers—one, two, three, four. For five they said a hand; for six, a hand and one; for ten, two hands; for fifteen, two hands and a foot—that is to say, ten fingers and five toes; for twenty they said a man, which was a short way of saying ten fingers and ten toes. If you had asked Wawa what was the number of men and women and children in his tribe, he would have replied, "Three men, two hands, and three."

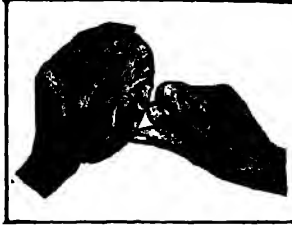
I will leave you to make out how many that comes to by our way of reckoning. The next morning, however, there were three men, two hands, and four

in Wawa's new village. For in the night a little baby boy was born to Bina. He was a funny little creature, and he came into the world lightly covered with fine, soft hair.

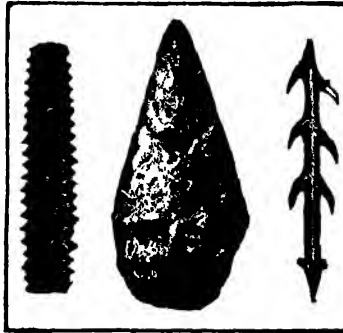
"How pretty he is!" said his mother. "Let us call him the Fawn."

"No, no," cried Wawa; "if we do so he will grow up as timid as a deer. He shall be called the Lion."

Now, the lion, in their language, was called the "Swar." And that was how the first baby that was ever born in England came to be known as "Swar."



How the tools were made.



The weapons they used.

THE FIRST BOY IN LONDON

HOW SWAR PLAYED WITH THE CAVE LION

SWAR was about five years old when he came to London. It was a very strange place in those days. The Thames was much deeper and wider than it is now. A great part of the valley between the heights of Hampstead and the hills of Surrey was under water,

and the rest was a trackless jungle swamp. Here and there, on patches of rising ground, grew large fig-trees laden with ripe fruit, and there were tall laurels, towering planes, and hundreds of strange plants and lovely flowers which flourish in warm countries.

Monkeys chattered in the forest; herds of elephants and wild horses and wild cattle roamed in the prairies. In the river were fierce, huge water-beasts, like the rhinoceros and the hippopotamus; and panthers and leopards and striped hyenas crouched by the river-edge.

"Here we will plant our tents," said Wawa, the father of Swar and the chief of the tribe, leading his people to the spot where St. Paul's Cathedral now stands. "The great water will protect us on the south," he said, pointing to the Thames. "And these streams will guard us on the sunrise and the sunset," he continued, turning to Walbrook on the east and Fleet River on the west.

On the north was a swampy marsh, and here the tribe built a great fire, and kept it burning night and day to scare wild animals away from their camp.

"Be very careful, Bina," said Wawa to his wife, "that Swar does not toddle beyond the fire. Women and children must hide in camp until the hunters have cleared the swamp of great beasts."

"How tired I am of it all!" exclaimed Bina. "Ever since Swar was born we have been kept moving farther and farther north. Shall we never settle down quietly in some place where the children can walk about in safety?"

"Yes, little woman," said Wawa, with a smile. "Now I have come to this great new river, where game and fish and beavers are so abundant, I will cease from wandering, and settle here. Look! Here is the pelt of a lion's cub I killed this afternoon in the swamp. You can make Swar a fine dress of it. Then he will be a little Swar indeed."

Swar was the tribesmen's word for "lion," and it was given to the little boy so that he might become as brave and mighty as the king of the jungle. Bina was much pleased with the cub's skin, as her child had torn his beaver dress to pieces. Without waiting to cure the pelt, she quickly scraped it and tied it round Swar, who was eager to show himself to his playmates in his new and glorious attire.

"I'm a lion—a terrible lion!" he shouted gleefully, running among the other children.

He ran about on all fours, trying his best to roar in a voice of thunder, and his companions pretended to be very frightened, and then they got some

sticks, which they made believe were spears, and with these they began to hunt the lion.

Swar was at a disadvantage, as, in order to play the game, he had to crawl about on his hands and feet. At length, pressed by the hunters, he crept down the bank of the Fleet River, and tried to find some hole into which he could retreat.

"Daddy says that the cave lion always goes into its cave when it is badly wounded," said Swar to himself, as he clambered down to the water-edge, and then stole out into the swamp. This was a delicious place to hide in. Tall grasses higher than his head waved in the wind. Clumps of dense bushes with stiff forked branches that he might crouch in rose everywhere. He crawled in thick deep moss.

By this time he had got quite away from his companions. He could hear them calling in the distance to each other, but none of them dared to leave the camp. Swar hid in a clump of bulrushes, vainly waiting for his playmates to come and discover him.

It was not until it was growing dark that he came out, and then he was frightened by the silence and the loneliness and the strangeness of the jungle in which he had hidden. It was too dim for him to see his way, and in trying to get back to the camp he walked farther out into the marsh.

Suddenly a lion roared quite close to him. He cried out in terror, and a huge form crashed through the underwood and pounced upon him, and then stood over him, whining curiously, and licking him and smelling him. It was the lioness whose cub Wawa had killed. "The poor huge beast knew the smell of the skin that Swar wore, and thinking that he was her cub, she picked him up gently in her mouth and trotted off with him, purring as a cat does when it is pleased.

All that night Wawa and Bina and the men and women of the tribe wandered by the Fleet and the Thames and the Walbrook, searching for Swar. At break of day the father found the trail of his little son, and quickly traced it through the swamp to the clump of bulrushes. There he caught sight of the print of the feet of the lioness, and he cried aloud with woe, and fell down weeping.

Very slowly he went back to his tent, and took out his heaviest club—a great stone thing weighing a quarter of a hundredweight—and called to all his men to bring out their hunting spears and follow him.

"Are you going to find Swar?" said Bina. "Have you found his trail?"

"Yes," said Wawa slowly. "I have found his trail."

He could not bring himself to tell his wife what he had found besides, but hurried off with his men on the spoor of the lioness. "I killed her cub; she has killed my child," he thought to himself. "I will take care that she shall not kill anything else."

He traced the spoor of the huge beast across the swamp to a cavern on the southern slope of Primrose Hill.

"Wait till I call," he whispered to his men. And very warily and very gradually he crept up between the dense jungle growth to the mouth of the cave. Happily, the wind was northerly, so his scent was not blown towards the beast's den. He got within fifteen paces of the cave, and then peered through the leaves.

Had he been less surprised at what he saw, he would have leaped up and shouted. As it was, he kept utterly motionless with wonder, having grasped the situation. The lioness was lying down just outside the cavern, and Swar was sitting quite happily between her huge paws and merrily playing with her.

He pulled her wooly fur, and she sat blinking at him with her large yellow eyes. Then he tried to clamber up her huge back, but rolled down, and seized

her long tail, saying, "If you won't take me back to the camp, I'll run away." The lioness still blinked lazily at him, and in the light of the rising sun her yellow eyes looked like jewels. Swar made a playful jump at them, and ended by claspings his little arms around the dread beast's neck. Then he started to toddle off, but the lioness arose and gently took him in her mouth and sat down again by the cavern, and dropped him on her paws, and purred over him and patted him lovingly.

"She thinks he is the cub she lost, and she is afraid to let him go from the cave," said Wawa. "She smells the cub's skin around him, and that saves him."

The chief crept back to his men, and told them to return to the camp.

"One man now," he said, "is better than many. There will be less danger of her scenting anything strange when she leaves her den in search of some food."

Happily, the great beast was very hungry, as she had not done any hunting while seeking for her cub. A little before noon she got

up and shook herself, and disappeared in the jungle in search of food. This was Wawa's opportunity to recover his little boy.

"Swar! Swar!" said Wawa to his boy, who was sitting on the ground.

Swar ran forward with a cry of joy, and Wawa lifted him on his shoulder, and tore with him through the thick jungle.

That night the chief had a line of fires lighted all along the northern side of the camp, and the lioness howled behind them for her little human cub but dared not enter the camp. But Swar slept soundly in his mother's arms.



THE TRIBE BUILT A FIRE

THE TALE OF A SLAVE

IF ever you go to Algiers you will hear the name of Geronimo, and this is the story they will tell you.

Geronimo was an Arab, a native of Algeria, where he was born in the middle of the sixteenth century. He was taken captive during an expedition made by the Spanish garrison of Oran, and was baptized into the Christian faith. When he was eight years old, however, he managed to escape and rejoin his friends. Persuaded by them, he then renounced his new religion and became once more a Mohammedan. But the teaching he had received during his captivity had made a deep impression upon him. He returned to the Spanish garrison, and became a Christian.

Some time afterwards, however, when out in a boat, he fell once more into the hands of enemies, this time a band of Moorish pirates, who carried him to Algiers and sold him as a slave in the market-place of his native city.

Now, when he and his fellow-captives were standing in the slave-market wondering whether they would have kind masters or cruel, Geronimo was singled out on account of his manly bearing by an agent of the Governor of the city, who paid the price demanded. His master proved to be a stern and cruel Mohammedan, who demanded that he should give up his faith. Those who accept this religion think that they commit sin if they do not try to make all around them accept it also, and will go to any lengths to carry out their purpose. Moreover, he did not consider that a slave had any rights aside from his master. He bade his overseer see to it that the new servant turned from his former beliefs.

This, however, Geronimo firmly refused to do. His master became infuriated, and treated him with great brutality. When he found that this had no effect, he offered him great rewards and even liberty itself if he would do as he wished. But Geronimo remained steadfast.

About that time a new fort was being built and Geronimo, with other laborers, was working there. Part of their duty was to make huge blocks of cement, for the walls of the fort. The process was this: the cement was mixed in great quantities, much as it is to-day, and then shoveled into big wooden boxes. When

it had set, the boxes were removed, and the solid masses were carried away and placed in position.

One day, as the Governor strode among his workmen his eye fell on Geronimo. It occurred to him that a terrible instrument lay ready to his hand. He would give his slave another chance of renouncing his religion, and if he refused he should be buried alive in one of those boxes of cement.

Geronimo was brought forward and given his choice. He refused. The Governor, beside himself with fury, ordered the brave fellow's hands and feet to be bound, and the cruel sentence was carried into execution. The great block of concrete, with the heroic slave imprisoned inside, was placed in the wall of the fort. Geronimo was calm and brave to the end. As the deed was finished, the Governor, who, perhaps, had hoped in his heart that Geronimo would not hold out, was heard to exclaim: "I never thought that dog of a Christian would die with so much courage."

The event reached the ears of one of Geronimo's old friends, a Spanish monk, named Haedo, who wrote it down. This was in the year 1569. Nearly three hundred years after, in 1853, it was found necessary to destroy the fort, and the man in charge of the work determined to see if the story of Geronimo were true. After much patient digging and searching his labors were successful, for on December 27 in that year he discovered the martyr's remains enclosed in the masonry as had been described by the old monk three hundred years before.

The bones were carefully removed and interred with much pomp in the Cathedral of St. Philippe, where they rest to this day, in a marble tomb.

As a further memorial of Geronimo's splendid fidelity and courage, liquid plaster of Paris was run into the mold formed by his body in the concrete wall, and a perfect model, showing not only his features, but also the cords that bound him, and even the texture of his clothing, was produced. This now lies in the Government Museum at Algiers, and that is why, if you go there, you will hear the story of Geronimo.

THE FARMER AND THE RAVEN

A MAN caught a raven, and, after a great deal of trouble, he managed to teach it to say, "Of course I am." He then took it to a neighboring town, and offered it for sale in the market-place.

By-and-by two farmers came, and one of them asked the price of the bird.

"Ten pounds," said the owner.

"That's a lot of money," remarked the farmer to his friend. "Do you think it worth so much?"

Before the other farmer could reply, the bird croaked hoarsely, "Of course I am."

This apparent cleverness so pleased the farmer that he paid the money and carried off the raven.

When he got home, he said to his wife:

"See, I have brought you a present."

"Oh, thank you!" said the wife. "He is a very pretty fellow."

Promptly the raven exclaimed, "Of course I am."

The woman was greatly pleased. "He is as sensible as a human being," she said, and the raven answered solemnly, "Of course I am."

The farmer and his wife were quite delighted, and looked forward to having much amusement from so clever a bird. Their hopes, however, were doomed to disappointment, for the raven never spoke but the one phrase. Many a time did the farmer wish he had not parted with his money so thoughtlessly. At length he exclaimed in anger:

"That bird is a regular swindle."

The raven stretched out his neck and croaked dismally, "Of course I am."

"Try before you buy, next time," said the farmer's wife.

THE SON WHO RETURNED HOME

IN Japan, many years ago, a son who lived a very bad life brought great disgrace on his parents, who, nevertheless, loved him dearly. But their relatives persuaded them that it was their duty to disinherit so bad a son, and it was arranged that, according to custom, a meeting of the relatives should be held, to go through the ceremony of disinheriting.

The son heard of this, and, speaking mockingly of his parents before his bad companions, he declared that he would suddenly rush into the meeting, and, swaggering like a brigand, demand a large sum of money before they should get rid of him. His friends encouraged the plan, and made much of him. They were overjoyed to think that they could share in the spending of the money. Afterwards, when it was all gone, they would leave the bad son to go his way alone.

When he came to the house he peeped

through a hole in the door, and saw the family sitting in a circle. The disinheriting document was handed to the father for his seal, but, with tears in his eyes, the father hesitated.

"After all," said he, "my son may get better."

"Yes," said the mother. "Let us wait a little longer, and see if he will turn."

The relatives urged them to affix their seals; but again the parents hesitated, and, with tears in their eyes, spoke of the possibility of their son giving up his evil ways.

The relatives began to get annoyed, but still the father would not put his seal to the document. The son, who was listening, felt a new sensation come over him. He was touched by the love of his parents, and, bursting into the room, he craved their forgiveness, and from that moment he forsook his bad companions, and gave up his evil ways.

THE STONE THAT GATHERED NO MOSS

A BOY came home from school one day, and said to his mother: "The teacher told me this morning that it was not worth my while coming to school any more, as I seemed to have nothing more to learn, so I shall go no more."

"Very well, my son," replied the mother, "if you have done with school, you must go to work. I know of a tinker who is in want of a boy; you shall go and work for him."

The boy was delighted, and accordingly

set out next morning to learn the trade of a tinker. It was summer-time, and for a while he was quite happy roaming about the country with his master, grinding knives and scissors. But winter came, with ice and snow, and he found that the life of a tinker was not all he had thought it. So he decided to look for other work.

A few days later, as he was passing along a street, he saw a tailor sitting in a shop window stitching away. "That is the sort of work I should like," he thought. "I will become a tailor." So he left his master and started to learn how to cut cloth and make clothes. For a little while all went well.

"I am indeed fortunate to have got work so much to my liking," he thought. "I shall suffer no more from the bitter winds or driving storms of rain and snow. No more cold hands and tired feet for me. Think of picking up good dry cloth instead of wet cold knives and scissors which always sent a shiver down my spine. Instead of trudging along the roads for hours at a time, I shall have nothing to do but sit in a warm room and stitch from morning to night."

Once more he became discontented. Not all at once, of course, for discontent never comes like that, but one little thing was unpleasant, then something else became disagreeable, till before very long he was as unhappy and enduring as many miseries as he had already escaped from.

"It's all very well to be a tailor in the winter-time," he said to himself, "though sitting still on a hard board hour after hour makes one's limbs ache so that it is nearly impossible to stand; but in the hot summer days it is really cruel to expect me to remain at work indoors with the heat from the irons. No, I can't

stand it any longer. I must get other work."

That afternoon there came down the street a regiment of soldiers. How brave they looked in their trim uniforms!

"There is some pleasure in a life like that," thought the boy. And then and there he decided to become a soldier.

Very soon he found out that he had made a mistake. A soldier's life was far different from what he had imagined. There was heavy drill and constant work. The flashing swords, the spirited horses, and the smart uniforms had all to be kept in order. It was not the easy life of



The boy decided to look for other work

grandeur and glory he had pictured, but one of endurance and effort. Sometimes when he was quite worn out with the exertions of the day he had to mount guard instead of having the sleep and supper he longed for. To make matters worse, he could not give up his work the moment he grew tired of it, as he had done before. He was bound to serve his country for three years, and, whether he liked it or not, had to obey those who were over him and make the best of the position his foolishness had

brought him to. At length his period of service came to an end, and he took his discharge. He made up his mind to visit his native village. On the way he heard of a farmer who wanted an extra hand to help with the harvest so he made his way to the farmhouse, saw the farmer, and asked for the post.

The farmer asked him what kind of work he could do.

"I can turn my hand to almost anything. I have been a tinker and a tailor and a soldier."

"Ah," said the farmer, "I am afraid you are not the sort of man I want. I am looking for a man who is not afraid of work. If you had had any idea of

working for your living, you would not have tried so many trades. You would be of no use on the farm."

And so the young man went here and there, but wherever he went it was the

same story, no one wanted to employ a man who had done a little of everything but had learnt nothing well. And all his life he had difficulty in earning sufficient to keep himself.

HOW THE CHILDREN SAVED THE BEARS

"THEY'VE come!" said Wandy, sitting on the log beside Tiki-tiki.

"Two red-faced men from town, come for 'scientific research,' with their horrid legs all strapped up in leather! They've pulled out their guns already, and they're all looking at them and talking, inside"

—she nodded towards the homestead —

"daddy, too, and Alan;

and once he wouldn't have

shot a bunny, even if it had

eaten up his prize lettuce!

When they've had some tea,

the men from town are going

straight off to get Australian

specimens. They want a

native bear, alive, 'cos the

law says they must not be

killed; but if it dies it can't be

helped. It'll do stuffed! Isn't it awful?"

"Isn't it dreadful?" echoed Tiki-tiki gravely.

"And daddy says *we* are to show them where the bears are, 'cos no one else knows. What shall we do?"

The children looked at each other with round eyes of horror.

"What shall we do?" asked Tiki-tiki.

"We can't tell them *wrong*," said Wandy. "'cos *that* would be fibs. I know" — she mused slowly — "we might show them where the bears are *when they're there*. Let's tell them where the bears live when they're at

home, and, while we go through the bush, warn them not to be in to-day!"

"What a good plan!" said Tiki-tiki. "And when we've passed the bears' home, we might *lose* the men a bit for

cruelty to animals — especially *our* animals."

In due time Wandy and

Tiki-tiki set off for the

bush, as the country is

called in Australia. With

them were the two scientists,

a dog, two guns, and two

wallets full of cartridges.

The scientists found the children

charming comrades, full of in-

structive chatter about their

little bush brothers and sisters, as

they called the wild creatures of the forest.

"Wandy means little woman," said Tiki-tiki. "It's aborigine talk. My name's Little Brother, and the baby bears are koalas. These are our bush names."

But he did not tell that Wandy and he could speak the fairy language. *That* might have given a clue to show the scientists what they were doing to save the baby bears, and they perhaps would be sent home again. Daddy would be angry if they were not polite to his guests, but friends come first, and the bears were such good fun.

The two little blue smocks sped on as fast as four short legs could go. The



The children warned the bears to say nothing.

scientists, though vastly interested in all they learned about bush creatures' ways, thought it a long, long walk to the bears' home. Under the blue smocks Wandy's and Tiki-tiki's hearts were beating time to their legs. For the children were afraid the bears might be sleeping up in the tall gum-trees, and never hear the warning.

It was in fairy talk that Wandy and Tiki-tiki warned the bears to lie low and say nothing. All the time they were passing under the gum-trees they trampled hard on the bracken and twigs and bark, and asked the two scientists if they would please stamp hard too, so as to scare away the snakes! So the bracken and twigs and bark were all the time crick-cricking a message on wireless fairy telegraph batteries. Then the locusts on their watch-towers in the branches took the message, and sent it from tree to tree, wherever there were bears; and the message said:

"Danger! Scoot! Love—From Wandy and Tiki-tiki."

But the wise gum-trees that stretch their protecting arms above all the innocent bush folk swayed anxiously, and sighed a wireless question back to the children: "How about the doo-doo? Will not *he* scent out the bears?" Doo-doo is the word for dog.

So Wandy rustled her hand caressingly through some gum-leaves to say: No! For Tiki-tiki has a nice little bit of raw steak in his pocket, and the doo-doo will

follow him, and not bother about any other trail."

By this time the scientists were hot and cross and tired, and sat down in the shade to rest. Perhaps the smell of the gum and eucalyptus trees floating on the warm air made them sleepy. But Wandy and Tiki-tiki went straight ahead, and never once looked back; and the doo-doo followed Tiki-tiki, nuzzling at his pocket.

When the scientists thought it time to move, they looked round for Wandy and Tiki-tiki; but all they could see far away in the scrub was two blue smocks fast

vanishing out of sight, and a gleam of golden hair, and a little round, dark, bobbing head.

"Coo—ee! Wait a bit!" they called.

Such a dance as Wandy and Tiki-tiki led those two scientists you could never think. In and out among the trees, over logs down gullies and across creeks with the kooka-bu, as as they call the laughing jackasses in the bush, laughing all the time. When the scientists got near enough to clutch the children,

they were off again; and, indeed, if the scientists had not been so very scientific, they could almost have fancied they followed a fairy and an imp instead of a real little girl and boy.

In a little glade, deep in the heart of the bush, the scientists thought they had at last overtaken the children, but they rubbed their eyes when the blue smocks turned out to be two little blue



Such a dance Wandy and Tiki-tiki led the scientists.



The goblin kooka-burras laugh at sunrise.

gum-trees swaying in the wind, and the gold hair was a sunbeam, and the little dark head a bobbing shadow.

The scientists, who had often boasted of their skill as bushmen, found, to their disgust, that they were hopelessly outwitted. Then the mosquitoes found them out, and *they* were more irritating than even Wandy and Tiki-tiki. And those goblin kooka-burras, who always laugh at sunrise and sunset, and so are called the bushman's clock, were saying quite plainly: "Lock-up time in the bush! All trespassers out!"

Meanwhile, Wandy and Tiki-tiki, followed by the doo-doo, marched right on for home, and when they reached the slip-rails of the home paddock it was quite dark.

Indoors daddy and Alan were waiting for the scientists, anxious to see the day's bag, but mother was eager to have Wandy and Tiki-tiki safe in her arms again.

Of course, everyone understood that the scientific guests had waited behind to make the most of the last hour of daylight, which is the best time for sport, for at dusk all the shy creatures venture abroad.

Ten o'clock struck, but, though there was a bright moon, no scientific friends appeared, and the doo-doo was whiming uneasily. So a search-party had to go—daddy, and Alan, and the gardener, and even an old tramp who was camping at the homestead for the night.

Strange to tell, the doo-doo was now quite ready to leave Tiki-tiki, and joyously bounded ahead with Alan, and was not long in following up the trail and finding his lost masters, who were really quite angry, though, as visitors

in a strange house, they had to pretend that it was a good joke. They cheered up a little while they were eating the hot supper mother had kept for them, and the doo-doo was being fed by Wandy and Tiki-tiki, who had been allowed to stay up late to see if the wanderers reached home in safety.

After supper, sitting round the big cosy wood fire, people began to ask questions.

"Queer you had such poor sport to-day," said daddy. "The children have never failed before to run across some native bears. Very queer!"

"Yes," said one scientist. "But more remarkable still that my dog deserted me for your little boy. He has never done that before."

Then the other scientist began to wonder why Wandy and Tiki-tiki had not waited when he coo-ceed.

"Why didn't you keep up to us? It was not the time to sleep then, for if the bears had already seen or even heard us, it gave them time to hide away. *They* only sleep when they have nothing else to do, or when it is cold," said Wandy, looking at them gravely.

Of course scientists ought to know this, and so the man stopped asking questions. They went back to town next day. They had had enough of the bush—no sport, too little scientific research, and too much of Wandy and Tiki-tiki. They have written in their scientific notebooks that there are very few animals in that part of Australia.

So this was how two little Australians saved the baby bears, and they mean to do the same every time people go out to harm their brothers and sisters of the bush.

TALES TOLD IN A MINUTE

SAVING FIVE HUNDRED YEARS

A JAPANESE boy caught a tortoise, which is known to live hundreds of years.

"A fish for dinner will do just as well," said he. "I will not cut short its long life of five hundred years."

So he put the tortoise back in the sea.

THE BREAD-WINNER

A father was working on a high scaffold with his son, when the scaffold broke, so that it was only able to support one.

"Good-bye, father," said the son; "you are the bread-winner. I will let go."

So the son died, and saved his father to support the home.

SELLING THE SUN FOR A SOVEREIGN

A man once found a sovereign in the street, and for ever afterwards it was noticed that he looked on the ground as he walked along.

But he never found another sovereign, and in addition he never saw the sun.

STORIES TOLD IN CHINESE SCHOOL-BOOKS

No lesson is more taught in China than that of respect for parents. This is enjoined as a religious observance, and has developed into the worship of ancestors. The story-books of the Chinese boys and girls are full of such stories of filial love as are given here.

THE MAN WHO FOUND DEER'S MILK

THERE was a young man named Yen, who had a great love for his father and mother, both of whom were very feeble and nearly blind. The doctor who visited them declared that the only thing that could possibly do them good was deer's milk, but this was too costly for them to buy. In the dead of night Yen went away to the mountains and shot a wild deer with his bow and arrow. Then, stripping off the skin, he dressed in it, went among the herd, milked the deer, and brought the milk to his parents, thus saving their sight.

THE BOY WHO SERVED HIS FATHER

WHEN little Hwang lost his mother, he determined more than ever to be a faithful and loving son to his father. It was the summer-time, and the father tossed about on his bed, unable to get any restful slumber owing to the great heat. Hwang crept to the bed, and, taking his little fan, stood over his father all night fanning him, so as to make him comfortable. This he continued to do all through the summer months. Then, when winter came, Hwang always lay upon his father's bed for an hour, to make it warm for him.

THE FISH FROM THE LAKE

A LITTLE boy named Liang, who had lost his mother, had a stepmother who treated him roughly, and was always finding fault with him. But Liang did not let this draw him away from his duty, and he was always seeking to do some kind act for his stepmother. She was very fond of fish, but during a cold winter there were no fish to be had. So Liang went out at night on a frozen lake, and, lying at full length on the ice, he breathed upon it until a hole was melted, and then through this he drew two carp, and took them home for his stepmother's breakfast. A great poet who heard of Liang's action wrote a poem about it.

THE BOY AND THE MOSQUITOES

THE parents of Wu Mang, who was only eight years old, were very poor, and could not afford curtains to

put round their bed to protect them from the mosquitoes. So directly his father and mother were asleep, Wu Mang went and lay down close to them, and when the mosquitoes settled upon him did not drive them away, but allowed them to bite him. In this way he drew all the mosquitoes away.

THE OLD MAN WHO BECAME A CHILD

LAE was an old man of seventy, but all his life he had been a most dutiful son, and now that his parents were very old, he gave up his life to pleasing them. Their minds had become weak owing to their age, and they had forgotten how old they themselves were and that their son had become a man; they thought that he was still a little child. So, in order to give them pleasure, Lae dressed himself in gaily-colored garments and danced about like a boy, to the great delight of his father and mother, who clapped their hands and said: "What a bright little boy is our son! How happy he makes us as he gambols about in his childish innocence!"

Lae's limbs ached for a week afterwards, but he bore it patiently and even gladly, though it was hard at times not to walk stiffly before his parents.

THE KIND SON WHO BECAME EMPEROR

YU SHUN was a very dutiful son, although his parents cared nothing for him. They loved his brothers, who were bad and idle men, but much handsomer than Yu Shun. One day his father put him down a well, and his brothers threw stones at him, but he managed to climb out. Then they set fire to a granary when he was inside; his clothes caught fire, but again he escaped. All this time Yu Shun worked hard on the farm, fished in the river, and chopped down trees for fuel, so that everything necessary for the home was provided. At last the Emperor Yaon heard of his filial devotion, and chose him as husband for his daughter; later on the emperor resigned the throne in favor of Yu Shun.

CONTINUED ON PAGE 6127.



SHAKESPEARE

The Book of MEN & WOMEN

MILTON



RAFAEL

HAY
OLE
ON



A winter scene at the birthplace of Robert Burns, as it was in the poet's lifetime.



BURNS

THE
LIFE
OF
BURNS

ENGLISH POETS SINCE MILTON



JUST four years before the death of

CONTINUED FROM 5939

loving king took advantage of their new

John Milton, a younger poet of less noble character, though still to be reckoned among the great writers, was appointed Poet Laureate. His name was John Dryden, and he was born at the Rectory of Aldwinkle All Saints, in Northamptonshire, on August 9, 1631. Like Milton's, the parents of John Dryden were Puritans, but, unlike Milton, Dryden did not throughout his life remain faithful to the religion of his youth. Indeed, his character cannot altogether be admired, for a great part of his life was spent in supplying the theatres, that had reopened with the restoration of Charles II to the throne, with plays of so vulgar a nature that they could not possibly be performed in public to-day.



liberty by encouraging the most vulgar performances.

It is to the shame of John Dryden, gifted as he was with splendid poetic powers, that he did not disdain to earn his living

by pleasing the bad taste of his time. Thus we can never think of him with the personal admiration that we have for Milton, who only received a small sum for one of the noblest poems of all times, while Dryden was earning a good living by helping to lower public taste.

We do not know much about the early life of Dryden, except that he was educated at Westminster School, under Doctor Busby, a famous headmaster, who, although noted for his powers in thrashing his pupils, was admired and respected by all who came under his discipline. As a schoolboy, Dryden was fond of writing verses, and, also, when he studied at Trinity College, Cambridge, he continued his poetic exercises; but he does not seem to have been a scholar of any particular note. He inherited a small income, not sufficient to support him, and shortly before his marriage with Lady Elizabeth Howard, the eldest daughter of the Earl of Berkshire, he turned to

Of course, the taste of the English people has greatly improved since the days of Charles II, when it was at its lowest, and the aim of all good people in our time is to keep public performances pure, and free from vulgarity. Instead of trying to do this, the Puritans simply shut the theatres, and perhaps did harm in that way, for as soon as the playhouses were reopened, the low-minded men and women who flattered and fawned upon the pleasure-

Copyright, 1918, by M. Perry Mills.

6029

JULIUS CAESAR



HERBERT SPENCER



writing for the newly-opened theatres as a means of support. On the whole, his plays, though frequently containing notable passages, are unworthy, and we have only to compare the best of them with the poorest of Shakespeare's to realize how very poor they are, although Dr. Samuel Johnson, one of the least trustworthy of critics, would seem to rank Dryden before Shakespeare.

**JOHN DRYDEN, THE POET LAUREATE
WHO WAS A JACOBITE**

When James II, brother of Charles II, came to the throne, and England seemed likely to become a Roman Catholic nation, as the new king wished to impose that church on the country, Dryden also became a Roman Catholic. This is often mentioned to his discredit; but there is little doubt that the poet was not guilty of the meanness of changing his religion to curry favor with the new king. He had been tending for some years towards the Roman Catholic faith, and, later, when William and Mary were called to rule the land after James had fled, Dryden remained a faithful Catholic, thereby losing what he had previously gained in the way of royal favor.

One of his most beautiful poems, "The Hind and the Panther," is written in praise of the Roman Church, which he likens to the "milk-white hind, immortal and unchanged," the Church of England being the panther, "fairest creature of the spotted kind," while the other Protestant Churches are likened to other animals of different kinds.

**WHEN DRYDEN WAS AN OLD MAN AND
POPE WAS A LITTLE BOY**

Dryden's great power took the shape of satire, and some of his finest verse is that in which he gives us biting pictures of historical personages. In his later years he adapted into English verse the works of the Latin poet Virgil, and, although these translations were well received, they do not give us a very good idea of the original, which is warm with all the sunshine and glowing beauty of Nature; whereas Dryden's verse is cold and glittering, like diamond-studded jewels. On May 1, 1700, Dryden died, and was buried in Westminster Abbey.

When Dryden was an old man, the most eminent literary figure of his day, there were people always keen to see him on his daily visit to a coffee-house where many men of note were in the habit of

meeting. It is said that one day, not very long before he died, the celebrated poet was pointed out to a little boy who had been brought there by a friend; and this pale-faced and delicate little fellow, when he grew up to be as famous as Dryden had been, never forgot this glimpse of his master. Already, as a boy of eleven, Alexander Pope was an intense admirer of Dryden's poetry, and had begun to write poetry himself, imitating Dryden's style. Despite his delicate health and stunted form, Pope was a marvelous student when only a child, and by the age of twelve he had written some quite remarkable poems, at least one of which, "On Solitude," might be taken for the work of a thoughtful man.

He was born in London, on May 21, 1688, his father being a wealthy linen-draper, who had joined the Roman Catholic Church, like Dryden, and who, in disgust at the new reign of William and Mary, had withdrawn to a house near Windsor Forest, where the early years of his son Alexander were spent.

**THE BOY OF SIXTEEN WHO RESOLVED
TO BECOME A GREAT POET**

The boy received some instruction from priests, and other masters, but had no regular education, though his great thirst for learning, and the wonderful activity of his young mind, perhaps did more for him than the ordinary course of education would have done. He was extremely well read in the classic authors, and throughout his poetry we find him constantly making use of the ancient stories of the gods and heroes of Greece. He was only sixteen when he determined to be a poet, and before he was twenty-three years old, he had finished and published his famous "Essay on Criticism," a comparatively short poem, full of remarkable literary knowledge and ripe judgment. It contains many lines which are constantly quoted, such as "To err is human, to forgive divine" and "A little knowledge is a dangerous thing." This poem left no doubt that its young author was a genius.

Although, on the whole, Alexander Pope was not what we should call a lovable character, he was probably a better friend, and kindlier, than his poems would suggest, for, like Dryden, much of what he wrote was inspired by the unfriendly spirit of satire. He was the very opposite of a natural writer, every line

being of clearly artificial style, even when full of force and vigorous movement. Thus, he was peculiarly unfitted to translate the great Greek poems of the "Iliad" and the "Odyssey," of which we read on pages 73 and 74, which are full of the grand and solemn music of Nature; yet his translations of these books were so popular that he was paid \$40,000 for the work. Less than sixty years before, Milton had received two payments of \$25 for "Paradise Lost." If we were to reverse the two sums, we should be placing the proper values on the relative merits of the works; but, as we have said before, the best work is not always the most highly rewarded. This does not say, however, that Pope was overpaid for his work, but that Milton was inadequately rewarded for his.

With the money which he thus earned, Pope bought a beautiful villa on the bank of the River Thames at Twickenham. There, as the friend of most of the great men of his time, the rest of his life was passed, and other famous poems were written, chief of these being "The Dunciad," in which he satirizes all the lesser literary men who did not happen to be his friends. "The Essay on Man" was another of the notable works written at Twickenham.

If it is by no means a pleasant picture of the poet which we gather from his writings and the stories told about him, we have to bear in mind that all his life was spent in physical suffering. "When the poor little man got up in the morning," says one writer, "he had to be sewed into stiff canvas stays, without which he could not stand erect; his thin body was wrapped in fur and prunelle; and his meagre legs required three pairs of stockings to give them a respectable

look." On May 30, 1744, this strange little poet died, and was buried at Twickenham, where Pope's Villa is still one of the best-known houses.

The next of the great poets is one whose poetry is familiar to many young readers, and several examples of it are to be found in The Book of Poetry. William Cowper was born at Great Berkhamstead, in Hertfordshire, on November 15, 1731, and was thus a boy of about the same age at the death of Pope as Pope had been at the death of Dryden. But there was no likeness between the two poets, either in their characters or in their writings. Pope was almost entirely lacking

THE KIND-HEARTED POET AND HIS PET



William Cowper, the poet, was of a gentle and retiring nature, and was a great lover of animals. One of his pets was a tame hare, that lived for thirteen years, and at its death the poet wrote the "Epi-taph," given on page 2133.

in the gentle qualities of human affection, so far as his poetry is concerned, while this was the enduring note of everything that Cowper wrote. With Cowper the common domestic affections are for the first time in English made the almost continual theme of a great poet. He was of a gentle and quiet nature, loving all simple things, fond of animals, and full of reverence for the works of God, though equally capable of enjoying the untainted humor of simple life, as we read in his amusing ballad of "John Gilpin" on page 2657. He lacks the

splendid vigor of Milton, and also the powerful satire of Pope, but he reaches the hearts of simple people by his gentleness and pure humanity. His greatest work is called "The Task," because he undertook to write it at the suggestion of a lady, as a task set him. It is a beautifully natural description of everyday life and the changing seasons. Cowper's father was a clergyman. His mother died when he was about six years old, and shortly after he was sent to a boarding-school, where he led a very miserable life for two years before he was sent to

Westminster School. At eighteen, he entered a law-office, and when twenty-three he had qualified as a barrister. He did little or no legal work, however, but lived a quiet and pleasant life in the Temple, writing a little for the publications of the day. Some years later, a relative secured for him an important position in the House of Lords, but the poet was so shy of appearing in public, as this office required him to do, that another post was suggested for him. For this he had to pass an examination, in preparing for which he overtaxed his mind, and had, for a time, to be confined in an asylum.

THE SHADOW ON THE LIFE OF WILLIAM COWPER, THE GENTLE POET

A tendency to melancholy was the result of this mental disturbance, and for the rest of his life, though enjoying long periods of happiness, he lived under the shadow of the dread return of his malady, but he was fortunate in the tender love of friends, won to him by his gentle sweetness of nature.

Apart from his many and beautiful poems, Cowper was a most charming letter-writer, and from one of his letters we take a description of himself, "As for me," he writes, "I am a very smart youth of my years. I am not, indeed, grown gray so much as I am grown bald. No matter. There was more hair in the world than ever had the honor to belong to me. Accordingly, having just found enough to curl a little at my ears, and to intermingle with a little of my own that still hangs behind, I appear, if you see me in an afternoon, to have a very decent head-dress, not easily distinguished from my natural growth, which, being worn with a small bag and a black ribbon about my neck, continues to me the charms of my youth, even to the verge of age." At East Dereham, Norfolk, April 25, 1800, this sweet singer, but afflicted man, passed to his rest.

The next great poet in the order of birth had died four years before Cowper, although he had been born twenty-eight years later. The name of Robert Burns has a more universal fame than that of his older contemporary, whom, as a man, he resembled in no way, but whom he outshone as a poet, by reason of a wider range of feeling and a still greater sweetness of song, which at the same time is stronger than that of Cowper.

THE SCOTTISH FARMER'S SON WHO BECAME A WORLD-FAMOUS POET

The story of Burns is, in some ways, sadder than that of Cowper. He was a great poet, who left us a splendid legacy of poetic beauty, but he might have given us much more, had he not, largely through his own folly, died too soon, with many a gem of song unsung.

Burns was born at Alloway, near the town of Ayr, on January 25, 1759; and, being the son of an intelligent farmer, who justly valued education, he received a good and serviceable training as a boy. This should be remembered, for he is too often described as a "peasant poet," assuming him to have sprung from a race of farm laborers. Although, in his youth, he did engage in farm work, we must not confuse him and his people with the uneducated countrymen of his time. He had, indeed, the good fortune to have for his father a man who had a real love of literature, and so cultivated the taste in his pupil that, early in life, Robert began the study of literary form; by which we mean not merely the reading of poetry because it pleases us, but the examining of the very words and phrases, to discover how the poet builds up the beautiful word-pictures which engage and please our fancy.

WHEN ROBERT BURNS WROTE HIS GREATEST SONGS AND POEMS

While still employed with the work of his father's farm, much of Burns's time was spent in studying the poets, and particularly those who wrote in the dialect of his native land, such as Allan Ramsay and Robert Fergusson. When he was twenty-five years of age his father died, and the poet himself became farmer on his own account; but, being without money, he soon got into difficulties, and being a poet, instead of a man of business, he sought to free his mind of his troubles by forgetting about them while he wrote his poems. For all the world the results were glorious, and in one marvelous year he had written poems enough to make his name immortal. "The Cotter's Saturday Night," which is in *The Book of Poetry*, "The Jolly Beggars," and "The Address to a Mouse" were among them; but he had not improved his condition as a farmer. At the end of two years he was still in difficulties, but still pouring out his wondrous song, with a feeling, a grace, and a

ENGLISH POETS SINCE MILTON



John Dryden



Alexander Pope



William Cowper



Robert Burns



William Wordsworth



Samuel T. Coleridge

perfection of music which none before him surpassed, and scarcely any had ever equaled.

In the hope of raising sufficient money to leave his native land and try his fortune in the West Indies, the poet brought out the first collection of his writings in a volume published at Kilmar-nock in 1786, a copy of which is now worth about \$3,500. Very soon these poems were being talked of everywhere, and, although only a few dollars had been earned by the book, the young poet saw that fame might be within his grasp; so, instead of carrying out his intention to emigrate, he decided to stay in his native land. Perhaps, for his later life, this was almost a misfortune, as he found himself, when he went to Edinburgh in the winter of that year, the lion of the hour, sought after by all the great people of the town. His book was reprinted the next year, and brought him some much-needed money, but the entire sum he made from it, over several years, was only \$2,500.

His great gift of song had now burst into full flower, and it is astonishing to discover how much he enriched the poetry of his native land in a short space of time, by writing numerous new songs to old tunes. In 1788 Burns moved to Ellisland Farm, near Dumfries, and married Jean Armour; but the next year he was appointed to a post in the excise service, which may be considered as one of his greatest misfortunes, for it led him into company, where his fondness for drinking alcohol had all too much encouragement. His farm, too, was a failure, and the remainder of his short life was neither happy nor creditable. Oliver Wendell Holmes has written these beautiful lines about him

"The lark of Scotia's morning sky!
Whose voice may sing his praises?
With Heaven's own sunlight in his eve,
He walked among the daisies
Till through the cloud of fortune's wrong
He soared to fields of glory,
But left his land her sweetest song,
And earth her saddest story."

Robert Burns died, July 21, 1796, at Dumfries, where he was buried. It is not for us to condemn in him the follies for which he paid by his untimely death, but rather should we admire the great genius that gave to the world so precious a gift of immortal song, and honor those fine qualities of courage, independence, and manly energy which we find abundantly in the best expressions of his mind.

Another great poet, who was twenty-six years old at the time when Burns died, but who had not yet become famous, was William Wordsworth. He was born at Cockermouth, in Cumberland, on April 7, 1770, and the greater part of his long life was passed in the beautiful Lake Dis-



Lord Byron



Percy B. Shelley



John Keats



Lord Tennyson



Robert Browning



Elizabeth B. Browning

trict, not far from his place of birth. The life of Wordsworth was, happily, the very reverse in every respect from that of Robert Burns, and, as a consequence, although he lived to be eighty years, there is less to say about him. It often happens that the lives of men who have been foolish or unfortunate, and have died while still young, are more interesting to tell than those of men who have lived long and happily, and this is true in the case of Robert Burns and William Wordsworth.

THE YOUTHFUL DAYS OF WORDSWORTH, AND HIS FIRST BOOK

Wordsworth came of a good family. His parents died when he was young, but he was well looked after by his uncle, being sent to a private school, and later to Cambridge University.

As a young man, Wordsworth spent some time in Switzerland and in France during the distracted period of the French Revolution. When he was twenty-three, he published his first modest book of verse, in which he describes some of the sights he saw abroad. His book did not attract great attention. But here and there some persons of good taste—and particularly his younger brother-poet, Samuel Taylor Coleridge—read it, who realized that its writer had the gift of true poetry. Simplicity of words, combined with lofty thought, and the truthful picturing of natural scenes, were the ideals at which the young poet aimed, and these, throughout his long life, he always strove after—if not always successfully.

While his friends would have had him become a clergyman, he was more inclined to literary work, and as he came into a small legacy at the age of twenty-five, was, for a time at least, relieved of the need to earn his living. A few years later, the payment of a large sum of money, which the Earl of Lonsdale had owed Wordsworth's father, provided the poet with an income which was sufficient to make him free to give all his thoughts to his beloved art of poesy. He had settled with his sister Dorothy in a cottage at Grasmere, and their companionship was not disturbed by his marriage, in 1802, and is one of the pleasantest chapters in literary friendships. Wordsworth was, indeed, fortunate in many ways; he never knew the pinch of poverty, his friends were many and faithful, and his whole life was serene and happy,

flowing like a gentle stream through green pastures. He was honored and admired by the great men of his own day, and, on the death of his friend Southey, he was appointed Poet Laureate. He died on April 23, 1850, and was buried in the churchyard of Grasmere. Of all English poets, he was perhaps the most unequal, for, although he wrote much that was perfect, he wrote a great deal that was feeble and colorless; but as a writer of the short poems, called sonnets, no English poet except Shakespeare and Milton has ever excelled him.

SAMUEL COLERIDGE, THE POET WHO WROTE "THE ANCIENT MARINER"

Samuel Taylor Coleridge was two years younger than his friend Wordsworth, having been born in Devonshire, on October 21, 1772. He was the youngest child of a poor country vicar, and he received his education at the old Christ's Hospital in London, perhaps better known as "The Bluecoat School," because of the uniform worn by its scholars. He was a remarkably apt and brilliant scholar. In habits he seems to have been the dreamiest of boys, but his dreams were born of his deep and intelligent interest in the great works of literature. At Cambridge University he gave promise of his remarkable powers, but, falling into debt, he enlisted in the dragoons, for which service, of course, he was totally unfit. His captain released him after a few months, on discovering that his recruit was better fitted for the study than the barracks, and he returned to Cambridge for a time.

We next find him at Bristol, with his friend Robert Southey, dreaming bright dreams of a new and happier life across the Atlantic—dreams never to be realized. Still hard pressed for the means of life, he married and settled down for some three years in a Somerset cottage, writing in this period some of his finest poetry. "The Rime of the Ancient Mariner" and "Christabel" were two of his poems written here.

"The Ancient Mariner" is one of the most beautiful and perfect things in English literature. It describes, in the simple, unaffected style of the old ballads, the fateful voyage of a ship, whose disasters were supposed to have followed upon the shooting of an albatross, according to an ancient superstition of sailors. Although Coleridge had no personal experience of seafaring, all the men of letters who have

themselves lived a sailor's life are at one in considering "The Ancient Mariner" the finest of all the poems that have attempted to reproduce for us the mystery of the sea. This proves that the poet, by the exercise of imagination, can know, and make known to his fellow-men, the mysteries of Nature, without having gone through the actual experiences in his own person.

COLERIDGE'S LAST DAYS AND THE POETS HE INFLUENCED

It was largely due to the kindness of friends that the life of Coleridge was made possible. Left to himself, incapable of conducting his own affairs in an orderly way, thriftless and slothful, he would probably have sunk into abject poverty and died obscurely; but his friends, who admired his great genius, sheltered him, and cared for both him and his family. It was in the house of such a friend at Highgate, with whom he had lived for some nineteen years, that he died, on July 25, 1834.

Immensely admired by all the great men of his time, Coleridge had exerted a power over his fellow-poets even more remarkable than the volume and beauty of his own poetry. Among those who thus came under the spell of Coleridge were Byron, Shelley, and Keats, and, although they came a little later, we might say the same of Tennyson and Browning. Thus, all these great poets, who lived at the same time, were in some way his followers, and so we can measure his profound influence.

The story of Byron is almost as sad as that of Burns. He was born to unhappiness. His father, a dissipated officer of the Guards, was a nephew of the fifth Lord Byron, and his mother was a Scottish lady, who was singularly incapable of bringing up her child wisely, or making him a happy child. George Gordon Byron was born in London, on January 22, 1788, and was there left with his mother when his father went abroad, never to return. His mother took her little lame boy—for he had been deformed by infantile paralysis, it is believed—to Aberdeen, to be near her own friends, and there his early life was passed; but when, in 1798, his grand-uncle died, and he became Lord Byron, he returned with his mother to England, where his education was continued at Harrow and, later, at Cambridge University.

THE YOUTH OF THE UNHAPPY LAME BOY, THE FAMOUS LORD BYRON

He was a headstrong and passionate youth, and his behavior at college was marked by much foolishness; but the power of poetry was in him, although his first book, "Hours of Idleness," which was published during his college days, gives very little promise of the moving and glowing verse he was later to write. Visits to the ancient towns of the Continent, and particularly some travel among the historic scenes of Greece, shaped the young poet's mind to works of romantic beauty, and in 1812 the first half of "Childe Harold's Pilgrimage," his first great poem, and the finest of all his writings, brought him immediate fame.

Byron was now in London, as Burns before had been in Edinburgh, the lion of the day, admired and flattered by all sorts of people. He was not, however, happy in his marriage, and his conduct as a man was severely condemned. In the spring of 1816, when he was only in his twenty-eighth year, he left his native land for good, and became a wanderer on the Continent.

BYRON AS A SOLDIER OF GREECE, AND THE END OF HIS RESTLESS LIFE

During those years of changing residence, he wrote many fine poems, which brought him large sums of money; but his restless spirit knew little peace. The end of his short life became him better than much of his conduct after he left England. He joined the army of Greece as an officer in its war against its oppressor, the Turk, and if Byron was not fated to die fighting for the freedom of the storied land he loved, he was still in active service when fever overtook him, and caused his death on April 19, 1824.

The body of the poet was carried back to England, and conveyed by road to the burial-place of the Byrons at Hucknall Torkard, near their beautiful home of Newstead Abbey, which has long since passed into the hands of another family. So greatly had the romantic personality of the poet and the glamor of his poetry impressed themselves on his countrymen, that it is doubtful if the death of any other famous poet has ever occasioned so much emotion as that of Byron. Tennyson himself has told us that when he heard Lord Byron was dead he felt that nothing else mattered; and, certainly, when the poet breathed his last, at Misso-

longhi, one of the most powerful voices in English poetry was stilled.

THE STORMY LIFE AND TRAGIC DEATH OF THE POET SHELLEY

Another poet whose fate was also to become a wanderer abroad was Percy Bysshe Shelley, born on August 4, 1792, near Horsham, in Sussex. Shelley was a fair and beautiful youth, perhaps less manly in appearance than Byron, whose fine head and ardent eyes suggest at once a poet and a man of independent spirit. Shelley, like so many of the young men of his day, imbibed revolutionary ideas, as a result of the great revolution in France, and with these was united in him an unhappy revolt against the teaching of Christianity. The result was an ill-ordered and unrestful life, for, though his poetic genius greatly enriched English literature, with such fine works as "Prometheus Unbound," "Adonais," and the "Ode to the West Wind," we cannot help feeling that his life was unhappy and his end tragic. He was drowned off the coast of Italy, on July 8, 1822. His body was washed ashore near Viareggio, and it was cremated in the presence of some friends, one of whom was Lord Byron; his ashes were placed in a casket, and afterwards were buried in the Protestant cemetery at Rome.

JOHN KEATS, ANOTHER GREAT POET WHOSE SUN WENT DOWN TOO SOON

In that same burial-ground lie the remains of another great English poet, who was a friend of Shelley, and who had died in the year before the latter was drowned. This was John Keats, who was born in London, October 31, 1795. Though only the son of a livery-stable keeper, and doomed to die before he had reached the age of twenty-six, he had yet, in his short life, by the grace of genius, made his name immortal. His poetry has the curious quality of being at once classical and natural. That is to say, steeped in the knowledge of the ancient writers upon whom the great poets of the Elizabethan era had modeled their verse, Keats wrote with all the artificial beauty of the Greeks, while yet he contrived to convey a sense of the freshness and sweetness which comes only direct from the love of Nature, as we find it in Chaucer and in Burns. One of his finest poems, "To a Nightingale," is on page 2744. He died of tuberculosis while at Rome, on February 23, 1821.

Unlike the last three poets of whom we have been speaking, the next great writer who calls for our attention was to enjoy a long life of serene happiness. Alfred Tennyson, who was born at Somersby Rectory, in Lincolnshire, August 6, 1809, was the third of six sons. Although his name is pre-eminent among the poets of the nineteenth century, had he died at the age Keats was when he passed away, it is doubtful whether he would have been so well remembered to-day, for Keats at twenty-six had given us finer gems of poetry than Tennyson had produced at the same age. This will serve to show us how much the world lost by the untimely death of Keats.

THE YOUTHFUL DAYS AND EARLY WRITINGS OF ALFRED TENNYSON

Tennyson was brought up in a bookish atmosphere. His father, to whom his early education was due, was a man of literary taste; both his elder brothers were poets. At Cambridge he gained a medal for a poem, and in 1826, nearly two years before he went to the university, he had joined his brother Charles in publishing a volume entitled "Poems by Two Brothers," which has long been one of the treasures of book-hunters. He was thus a poet at sixteen, and a poet he was bound to continue, as poetry was the passion of his life. His first independent work, which was published in 1830, and a second series two years later, were received so coldly by the critics that nearly nine years elapsed before he ventured to publish another; yet in these books were such poems as "The Lady of Shalott," "The Lotus-Eaters," and "The Queen of the May," which have long been esteemed among the finest examples of his poetry.

Meanwhile he engaged himself on works which were destined to conquer not only the literary critics, but the whole reading public. When, in 1842, he published two volumes containing "Locksley Hall," "The Gardener's Daughter," "Lady Clara Vere de Vere," and many other poems of the rarest beauty, thrilling with a sweet new music, and mysterious with the glamor of old romance, he had quietly won the battle of fame, and was hailed on every hand as England's new king of poets. Wordsworth was then the commanding figure among the poets, but even he did homage to the genius of Tennyson.

WHEN TENNYSON WAS A YOUNG MAN



The proper title of this charming, old-fashioned picture by Frank Stone is "The Duet," but it is particularly interesting for the portrait of Tennyson as a young man which it contains. The young poet is seen standing in a leaning position behind the settee, his thoughts apparently borne away on the wings of the melody.

His fame established, the remainder of Tennyson's long life was full of honor and of fine work. His was not a wild and wayward nature, so he was happily spared the disasters that have overtaken so many of the poets. Yet he did not escape the struggles that all who have not inherited riches have to face, for he was a man of forty before he felt he could afford to marry. He took this step in the same year that he was appointed Poet Laureate, in succession to Wordsworth, and the year was also notable, in his life, for the publication of one of his greatest works—"In Memoriam." On page 2191 we print some verses from this long and beautiful poem, in which Tennyson mourns the loss of a dear friend, Arthur Henry Hallam, the son of a great historian, who had been untimely cut off. The greatest achievement of his later life was the writing of the "Idylls of the King," in which the old legends of King Arthur are told again, and invested with a new beauty. He also wrote a number of plays, but, although many critics think

that much of his poetry is worthy to rank with the best of Shakespeare, he lacked the dramatic power in which the master poet was without a peer.

Tennyson, after his marriage, settled for a time at Twickenham, on the Thames, but in 1853 he went to live at Farringford, near Freshwater, in the Isle of Wight, where much of his life was passed, and in 1870 he became the owner of a very beautiful house, specially built for him at Aldworth, in Sussex, set on the edge of a woody hill, and looking clear across the rolling downs towards the south coast. Here, and at Farringford, he enjoyed many years of serene and happy life, the undisputed king of the literary world of his day. In 1884 his services to English literature were recognized by his elevation to the peerage as Baron Tennyson of Freshwater and Aldworth. On October 6, 1892, he died at Aldworth, and was buried in Westminster Abbey. His life has been written by his son, the present Lord Tennyson.

There was another great poet, very dif-

ferent from Tennyson in many ways, whose life ran its course with that of Tennyson. Robert Browning was born in London, May 7, 1812, so that he was but three years the junior of Tennyson, who also outlived him by three years, Browning dying on December 12, 1889.

A COMPARISON OF THE TWO GREAT POETS, BROWNING AND TENNYSON

Like Tennyson, Browning began to write poetry at a very early age, his first published work having been written when he was nineteen. His early education was chiefly derived from travel abroad, and Italy, as we have seen in the case of other poets, had much to do in influencing the poet's mind.

Like Tennyson, he sought to inspire his fellow-men with hope, but there is, perhaps, in his poetry a stronger feeling of courage than we find in Tennyson. His verses are rugged and unhewn, like the rocks on the seashore, while Tennyson's are polished and sweet with music, like a beautiful Italian garden with its fountains. He is not easy to understand at times, as he often tried to express more thought than his words could carry. In short, he is to be considered a greater thinker than a poet, although we have seen that in such pieces as "The Pied Piper of Hamelin," on page 370, and "How they Brought the Good News from Ghent to Aix," on page 2305, he could tell a moving story in clear and memorable words.

There were many contrasts in the characters of Tennyson and Browning. While the one loved to appear a poet in his person, as well as in his works, the other endeavored always to be regarded as an ordinary man of affairs. Tennyson was somewhat inclined to withdraw himself from his fellow-men; Browning thrust himself boldly into the everyday life of his time, although we cannot suppose that he had a lesser love of poetry than Tennyson had. But most people think that Tennyson was the greater poet of the two; and that his works will outlast those of Browning in the affections of most readers.

ELIZABETH BARRETT BROWNING, ENGLAND'S GREATEST WOMAN POET

Some people even consider, though not quite wisely, that Browning's wife, whose maiden name was Elizabeth Barrett, was a finer poet than her husband. It is true that, although Browning was thirty-four

when he married, and had written several notable works, his wife's fame was then greater than his own.

Mrs. Browning was indeed a remarkable woman. Born in Durham, March 6, 1806, the daughter of a wealthy landowner, she was so clever as a child that, when a girl of ten, she could read the poets of Greece in their native language, and at fourteen she had herself written a poem of some merit. An injury received when she was about eighteen made her an invalid for many years, during which poetry was the solace of her life. Her gentle nature, her warm love of the poor and oppressed, and her steadfast faith in the goodness of God, are all admirably expressed in her sweet and eloquent poetry, of which "Aurora Leigh," a work of considerable length, is perhaps the finest and purest flower.

THE LAST DAYS OF ROBERT BROWNING AT HIS PALACE IN VENICE

When the Brownings were married, in 1846, they left England, and took up their home in the lovely Italian town of Florence, about which we read on page 2787, and there, on June 30, 1861, Mrs. Browning died. Her husband survived her for many years, and towards the end of his life he removed to one of the fine old palaces that stand along the Grand Canal in Venice, as seen in the pictures on page 3077. There Robert Browning passed away, on the very day that his last book of poems, "Asolando; Fancies and Facts," was published; but his body was taken to England, and buried in Westminster Abbey on the very last day of 1889.

Edward Fitzgerald, who was born in the same year as Tennyson, is known for his wonderful translations of poetry from other languages into English. He is best remembered by his translation of a long poem called the "Rubáiyat of Omar Khayyám," a celebrated Persian poet, who lived centuries ago. Fitzgerald translated Omar's thoughts and clothed them in his own words, and the result is a beautiful and moving poem.

MATTHEW ARNOLD'S BUSY LIFE AND HIS WORK

Matthew Arnold, who wrote "The Forsaken Merman," on page 3401, was born in 1822 at Laleham, near the place where the battle of Hastings was fought. He was a son of Thomas Arnold, a very famous head master of Rugby, and with

the exception of one year at Winchester, all his schoolboy days were spent at the great school of which his father was the head. From Rugby he went to Balliol College in Oxford University, and graduated in 1844 at the age of twenty-two. He did not, like Tennyson, devote all his time to writing poetry. Rather, he made it the pastime of a very busy life, and, perhaps for this reason, most of his poems are short.

After his graduation he received a fellowship in the university, and later became private secretary to Lord Lansdowne, who was one of the most powerful statesmen of his time. Lord Lansdowne made him an inspector of the primary schools, and in this position he did much to raise the standard of education in England. In 1857 he was made professor of poetry at Oxford, and for ten years he filled this chair, in addition to fulfilling the duties of his inspectorship, a post which he held until two years before his death. Besides this he wrote books and reports on education, and critical essays.

Critics do not as a rule rank Matthew Arnold as high as Tennyson and Browning. Nevertheless his poetry is of a very high order, and many people think that "Thyrsis," an elegy written on the death of his friend, the poet Clough, is one of the finest elegies in the English language. "Thyrsis," "Sohrab and Rustum," "Balder Dead," "The Forsaken Mermaid" are favorites among his poems. He is even better known for his critical essays than for his poetry, and every high school student should study at least one of these essays, if only for the sake of studying his style.

DANTE GABRIEL ROSSETTI, THE PAINTER POET

Dante Gabriel Rossetti, who was six years younger than Matthew Arnold, was born in London. His father, who was an Italian, was professor of Italian at a London college. Young Dante Gabriel left school when he was about fifteen, to study painting, but in such a home as his, his education in languages and literature went on insensibly in fine conversation and daily reading. His father was a poet. His sister, Christine, whose beautiful poem "The Goblin Market" you will find on page 1867, became almost as famous as Dante Gabriel, and his other brother and sister are well known for their literary work.

As we have just said, Rossetti left school to study painting, and it was in this art that he first won his fame. He studied at a school called Cary's Art Academy, at the Royal Academy Antique School, and with the artist Ford Maddox Brown, and became a member of a famous band of painters called the Pre-Raphaelite Brothers, who sought to bring back to the art of modern painting the simplicity of the early masters. Rossetti was really the chief spirit in this movement, and had a great influence over the young artists of his day. He is classed with such painters as Holman Hunt, Millais, Sir Frederick Leighton, Burne-Jones and Alma Tadema. He had no less influence as a poet, and it is as a poet that we must think of him here.

He does not rank among the great poets, but his writing has wonderful beauty, and he had a remarkable power of writing so that his readers can see the same pictures that he saw. His famous poems are "The Blessed Damozel," a series of beautiful sonnets, which he wrote in memory of his wife, and a ballad "The King's Tragedy" in which he tells the story of Kate Barlass. He died in 1882 at the age of fifty-four.

WILLIAM MORRIS, A POET WHO MADE BEAUTIFUL THINGS

Like Rossetti, William Morris was a painter as well as a poet, and he was also a furniture maker. He was born in Essex, near London, in 1834. His childhood home was near Epping Forest, through which he roamed at will, and there he gained a love for nature, which he kept all through his life. It is said that he could recognize every wild bird of that forest on the wing. From a private school he went to Marlborough College and from there to Oxford. At first he intended to become a clergyman, but at Oxford he changed his mind, and determined to study architecture, and at the end of about a year his friend, Burne-Jones, persuaded him that his real genius lay in painting. Meantime he had begun to write, and in 1858 he published his first volume of poetry.

Although he studied both arts, he was destined to be neither an architect nor a painter. After his marriage in 1859, he decided to build a house, which should be, he told his friends, "a small palace of art," and this house was the beginning of the artistic movement of which you

may read in the "Makers of Beautiful Things." He had such difficulty in finding, for his house, furniture and fittings that were not heavy and ugly, that he had them made from his own designs. Furniture, wall-paper, hangings, stained glass, everything that was required for the house was made. From this it was an easy step to becoming a manufacturer, and with his friends, Burne-Jones, and Rossetti, and two others, he formed a partnership to manufacture wall-paper, tiles, tapestry and furniture.

Amid all this activity he found time to write tales and sketches, and the poems which place him high on the list of the minor English poets. Most of his poetry is story-telling in verse, in which he followed the model set by Chaucer. His busy life came to an end in the year 1896.

ALGERNON CHARLES SWINBURNE AND HIS MUSICAL VERSES

Algernon Charles Swinburne, who was a close friend of both Rossetti and Morris, was perhaps a greater poet than either, though not so fine a man, and he had not the ability that his friends had, of expressing himself in art as well as in words. He was born in London in the year 1837, but spent all his early years in the country. His grandfather had a home in the north of England; his father, who was an admiral in the British navy, bought a house on the Isle of Wight, and his family spent the warm summer months in the north, and the rest of the year in the south. The poet spent his schoolboy years at Eton, and from that school naturally went to Oxford, where he stayed three years, but left without graduating.

He must have been writing at Oxford, for the year that he left he published two dramas, "The Queen Mother" and "Rosamond." Five years later he published "Atalanta in Calydon" and other poems, which some one said introduced into the language "new astonishing melodies." From this time on he published many poems, and, while his work is not very well known by ordinary readers, it is generally conceded by students that he brought back to English poetry a rich flow of song that it seemed to have lost.

POETS OF OUR OWN TIME, MOST OF WHOM ARE STILL ALIVE

Rudyard Kipling was born in 1865 in Bombay, where his father was curator of the museum. He was sent to England

to school, and after his return to India, at the age of seventeen, he became an assistant editor of a newspaper, and began to write the stories for which he is so well known. Many of his poems are very fine, especially those that are scattered through his volumes of short stories. He has published three volumes of poems, "Barrack Room Ballads," "The Seven Seas" and "The Five Nations."

William Butler Yeats, the best known of the Irish poets who have come to the front in what has been called "the renaissance of Irish poetry," was born in 1865 in Dublin. When he was a little boy, he went to school in London, where his parents lived for some years, but after a time they went back to Dublin, and he was sent to school there. At first he meant to be an artist, like his father, but his desire to write was too strong, and he began to send poems and articles to the Dublin periodicals. He has written much poetry, all of it dealing with Irish life, history and folk stories, and he has also written a number of plays.

Stephen Phillips, who lived from 1868 to 1915, attended Shakespeare's old school at Stratford-on-Avon for a time, and perhaps the association gave him the idea of becoming an actor at the end of his first year at Queen's College, Cambridge. Afterward he taught history to army students, but later on abandoned teaching to write plays and poems.

Two poets who are better known than Phillips in this country are John Masefield and Alfred Noyes. John Masefield, who was born in 1875, led a life of adventure in his youth. As a boy he became a sailor, and afterward spent some time in New York, where he was glad to work with his hands. Then he went home and began to write plays and poems and stories of the sea. His best poems are poems of the sea, because they are drawn from his own experience.

Alfred Noyes, who was born in 1880, received quite a different training, for he was educated at Oxford, and adopted literature as his profession in his college days. He has written fine poems, but it is too soon to say how many will live.

The same thing may be said of all these later men. No one can tell how many of the men, whom in our day we call great, will be able to stand against the verdict of generations that are to come.

THE NEXT STORY OF MEN AND WOMEN IS ON PAGE 6111

The Book of ALL COUNTRIES



Santo Domingo, the Capital of the Dominican Republic

THE ISLANDS OF THE WEST INDIES

THE history of the tropical islands of the West Indies is one long tale of stirring adventure —of Spanish treasure hunters, corsairs, buccaneers and bloody sea fights. Before the time of Columbus, there were legends of enchanted islands, far out in the Atlantic, that disappeared from view even as adventurous sailors were about to land upon their shores.

Look at the map of the United States and you will see four large islands stretching more than 1,300 miles eastward from the entrance to the Gulf of Mexico, and forming the northern shore of the Caribbean Sea. Cuba, Jamaica, Haiti and Porto Rico; these are the Greater Antilles. Curving outward and downward from Porto Rico until it almost touches the coast of South America is a chain of smaller islands which form the eastern end of the Caribbean, these are the Lesser Antilles. There is still a smaller chain of islands, the upper end of which almost touches Florida; these are the Bahamas, which are not a part of the Antilles at all. There are nearly 100,000 square miles of land in these islands, of which Cuba has almost one-half; Haiti, Jamaica and Porto Rico are next in size. Trinidad, another of the larger islands, lies away down at the lower end of the Lesser Antilles, so

close to the South American coast that many always think of it as a part of that continent.

About the centre of the outer edge of the Bahamas is a tiny island of special interest, called Watling or San Salvador, because here it was long supposed that Columbus first trod on American soil, though some historians think that Cat Island, to the northwest, is the island which Columbus called San Salvador in the mistaken belief that he had reached India by a shorter route. The two original tribes of "Indians" whom Columbus and the first explorers found were called the Arawaks, and the Caribs. The first were a gentle race which were quickly exterminated by the Spaniards, but the Caribs fought for every inch of their land, and a few of them still survive.

THE SPANISH GOLD SEEKERS EXPLORE THE ISLANDS

The first Spaniards, who accompanied Columbus on his later voyages, or went with the leaders who followed him, were fortune hunters. They did not want to till the soil; they did not even want to dig the gold which they hoped to bring back to Spain in such vast quantities. Work of any kind was unpleasant, and their purpose was to force the natives to dig gold for them. For this reason the first Span-

ish settlements were planted on the shores of Cuba, Haiti and Porto Rico, those big islands in whose mountains some gold was found. The low and sandy islands of the Bahamas, though first discovered, were neglected and left to other nations to settle or colonize. For the same reasons the Lesser Antilles were never settled by the Spaniards, though they claimed them as long as they possibly could.

The peaceful Arawaks, whom the Spaniards found living in the Bahamas and Greater Antilles, were not of the stock of which slaves are made. When they resisted the efforts of the Spaniards to force them to work in the mines, they

NEGRO SLAVERY IS INTRODUCED ON THE PLANTATIONS

The Spaniards who remained behind gradually discovered that sugar, an expensive luxury in Spain, could be produced from the fertile soil of Cuba, Haiti and Porto Rico at a large profit. They had learned from the Arawaks how to plant and smoke tobacco, and a demand was also growing at home. Cotton brought better prices than wool. This was the beginning of the rich trade which sprang up between Spain and the West Indies, and the need of labor to work the large plantations brought with it a trade in negro slaves. Large numbers were imported every year from the west coast of



Kingston, the capital and chief port of Jamaica, is well located and has an excellent harbor. The town has many modern improvements, such as electric lights, street railways, and an abundant water supply. The suburbs are noted for their beauty, and the most attractive homes are outside the city. The town is kept clean and is healthful, which is rather unusual for a town in the West Indies.

were butchered. Those that were captured died soon after. In less than a hundred years after the first appearance of the Spaniards, there were only sixty families of natives in Cuba, and the neighboring islands had suffered in the same way. The Spaniards did not interfere with the Caribs, natives of the Lesser Antilles, a stronger and more warlike race.

As soon as the Spaniards found that gold was not so plentiful in the Antilles as they had hoped, the treasure hunters went further; Cortes to Mexico, to rob the Aztecs; others sailed to the Spanish Main, as the South American coast, from the mouth of the Orinoco to Darien, was called, in search of the fabled kingdom of gold, which they named "El Dorado."

Africa. If you were to make a trip to the West Indies to-day, you would see how many black people, and how few white people are living there now.

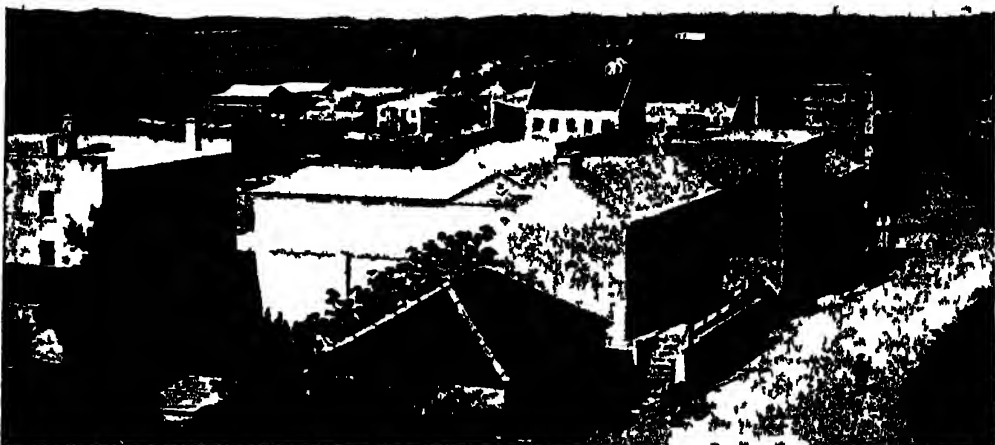
The ships of France, England and the Netherlands were at this time in search of new markets. They ventured to the Spanish islands, at first in the hope of picking up profits. When the Spaniards would not allow this, these vessels were used as slave ships. Then these merchant pirates began arming their ships and fell to plundering the settlements or to lying in wait for the treasure galleons of Spain and capturing them.

One of the most prominent of these sea rovers was Sir John Hawkins, who made three trips, between 1562 and 1567,

from the African coast, with slaves, to Hispaniola, as Haiti was called. On his third trip the Spaniards destroyed four of his five ships. At that time he had with him Francis Drake, then only a boy. Five years later Drake went forth in command of a venture of his own and raided the Spanish settlements on the Isthmus, though there was no war between England and Spain at the time. After the destruction of the Spanish Armada by the English, Spain began to grow weaker as a nation, and at the conclusion of peace with England, Spain was content to keep only the four islands which she was occupying, Cuba, Haiti, Porto Rico and Jamaica.

The first English settlement in these islands was made in 1624, by Sir Thomas Warner, at the head of a number of gentlemen adventurers. They first took possession of the island of St. Christopher, often known as St. Kitt's. The Caribs gave them a hard fight, and they had to call upon a French corsair, by the name of Esnambuc, for help. As a result, part of the island was given over to the French. In 1636 the Dutch made a settlement on St. Eustatius, and, in 1646, French colonists landed on St. Bartholemew.

The fierce Caribs, however, were by no means passive during these attempts to deprive them of their land. For many



The Bermuda Islands include 360 small islands but Bermuda proper is three times as large as all the others together. Hamilton a part of which is shown in the picture, is the largest town. The islands are of coral formation and are very beautiful. There are no streams, and people depend upon the rains for fresh water. Everywhere you will see that cisterns are provided for the storage of drinking water.

OTHER NATIONS DEMAND A SHARE OF THE SPOILS

The English, the Dutch and the French began to occupy the smaller chain of islands, the Lesser Antilles, about this time. The Dutch West India Company was formed in 1621, the French in 1626, and the first English patents which led to plantations in this region fell between 1623 and 1627. Each one of the great European powers had a different reason for wanting to take possession of the islands. Spain wished for gold and mineral wealth, France desired trade and settlements, and the Dutch hoped to cripple their ancient enemy, Spain, by cutting off the sources of her wealth. The English intended to settle permanently.

years they fought the invaders of their islands, with more or less success. Finally, the few who remained, realizing that they must some day be overcome, made an agreement with the whites whereby the two islands of St. Vincent and Dominica were to be given up to them. Later many of them went to an island off the coast of Honduras. There, in Honduras and St. Vincent, the last of the fighting race of Caribs may be found to this day.

THE ISLANDS PASS FROM HAND TO HAND

For nearly two hundred years after the first settlements of these islands, they frequently passed from hand to hand, for during this long period there was

hardly a year in which at least two of the great powers were not at war with each other. The most important of these changes, which was permanent, was the taking of Jamaica by an English fleet under Admiral Penn, the father of William Penn, in 1655.

Aside from the four nations of which we have spoken, a fifth element entered into the fighting. During all this time the Spanish settlements in Haiti had been in the eastern part of the island, around Santo Domingo, while the western part was left to the natives, who lived by hunting wild cattle and hogs. Here the roving traders and adventurers would put in for supplies of smoked meat. They were largely French and English, and were later joined by some French who had been driven away from the island of St. Christopher.

THE RECKLESS BUCCANEERS RULE HAITI

This little colony of "boucaniers," or "meat driers," which is what the French word means, settled in the island called Tortuga, where they did a profitable business, and their little island became the centre of supply for the rovers and smugglers. These buccaneers, as the English called them, were raided by the Spanish in 1638. While away on a hunting trip their settlement was burned. In revenge they got together a fleet of vessels and made the robbing of the Spanish their chief business and pleasure. It was partly due to them that Spain lost one of her four big islands, Haiti.

Let us see how this came about. The "Brethren of the Coast," as they called themselves, went to the western end of Haiti. They were joined by other Frenchmen, who laid out plantations, brought slaves to work on the land, and prospered. Before the Spaniards were fully aware of the danger these men had built a fort at the head of the bay which sheltered them and called it Port-au-Prince. After a war between Spain and France, which ended in 1697, Spain gave up this end of the island to France.

THE NEGRO REVOLT, AND THEIR LEADER, TOUSSAINT L'OUVERTURE

Ninety years later, on the eve of the French Revolution, this French colony had twice the population of the Spanish colony, and possessed more than twice its wealth and foreign trade. Then came the Great Revolution in the mother

country, declaring all men equal. The white planters accepted the new order, but they refused to apply its principle of equality to the black slaves. Even the free negroes were not allowed to become citizens. The result was an uprising of the negroes, led by a young mulatto who had been educated in Paris. This so alarmed the French government, especially as the English and Spanish forces were making a successful attack on the colony, that the negroes were declared free in 1793. This brought all the slaves over to the side of the French Republic.

At their head was now perhaps the most remarkable man the negro race has ever produced, Toussaint L'Ouverture. He was a full-blooded black, born a slave, but with a genius for commanding men. The French saw his great ability, and made him commander-in-chief of the native forces. He drove out the English and Spanish troops, and, in 1795, France and Spain made a treaty by which the Spanish colony on the eastern end of the island was ceded to the French. Toussaint L'Ouverture became governor-general and practically dictator. In 1801 he proclaimed the absolute independence of Haiti, with himself as supreme chief. Napoleon, who was then in power, sent out an army of 30,000 men, and a long war followed. Yellow fever came to the aid of the struggling blacks. The French general asked for a conference, which Toussaint L'Ouverture granted and attended in person. Here he was seized and carried over a prisoner to France, where he died in prison of starvation.

Meanwhile the blacks continued to fight. Finally the French forces were penned in and forced to surrender, and so France lost the greatest of her West Indian colonies. The Haitians declared their independence in 1804, and a negro, General Dessalines, was proclaimed president for life. Very soon he declared himself emperor, with the title of Jean Jacques I, but he proved to be such a brute that two years later his own soldiers waylaid and killed him. Until 1844, except for a little time when Spain regained her colony at Santo Domingo, the whole island continued under one government as the Republic of Haiti. Then there was a split, and the old Spanish colony became the Dominican Republic.

THE DOMINICAN REPUBLIC

The Dominican Republic is nearly double the size of the Haitian Republic, but has only 700,000 people. Of these about one-tenth are Spanish, while the rest are principally colored people. The pure blacks are very few in number in Santo Domingo. There is a national congress of twelve senators and twenty-four deputies. Each senator represents a province, while the deputies are elected in proportion to population. American and English capital has been encouraged,

The population of Haiti is somewhere between 1,500,000 and 2,500,000, of which about ninety per cent is pure black. The remainder is colored, as those partly white are called. The few whites are mostly foreigners, as the French planters were expelled shortly after the declaration of independence. The exports are cotton, coffee, cacao, mahogany, tortoiseshell, zinc and copper, but the resources of the country are practically undeveloped. So strong is the prejudice against foreigners that they are not allowed to hold real property.



Nassau, situated on the island of New Providence, is the most important town in the Bahamas. These are the government buildings. The governor has authority over twenty inhabited and many uninhabited islands making up this group, but the total population is very small. The principal exports are sponges, hemp, lumber and pineapples. During the Civil War, Nassau was an important port for blockade-runners.

but there has been much disorder. There are a university, two colleges and many schools. The exports are chiefly sugar, coffee, cacao, mahogany, hides and honey, of which about half goes to the United States. In May, 1916, the United States landed troops to preserve order, and now controls the island.

REVOLUTIONS IN HAITI, WHICH FORCED THE UNITED STATES TO ACT

The history of the Haitian Republic has been a very stormy one. Almost every ruler, whether emperor or president, has met a violent death. The uprisings have been so numerous that the United States government was compelled to send a military force to restore law and order, and it is still held there.

SPAIN IN PORTO RICO, THE "RICH PORT"

After the capture of Jamaica by the English and the loss of their colony at Santo Domingo, the Spaniards kept only Porto Rico and Cuba. Like Jamaica, Porto Rico was much neglected; all through the seventeenth and far into the eighteenth century the beauty and riches of the island were overlooked. In 1700 there were only three villages on the island, and in 1765 there were only 45,000 inhabitants. At last Spain began to wake up to the value of this rich possession. Spanish peasants were sent out as real colonists and negro slaves were imported. In 1859 the Spanish Cortes, or legislature, granted a constitu-

tion to Porto Rico, which made it a province of Spain instead of a colony, and gave it representation in the Cortes. The way in which the United States gained possession of this island is told in another place.

The history of Cuba is by far the stormiest of all Spanish West Indian possessions. Until the latter part of the eighteenth century the colony did not grow much. A good many French immigrants came into Cuba after the revolution in Haiti. Wealthy planters from the South American colonies also came, and began to develop the land. The governor-general, however, was always a despot, with the power of a military commander in a besieged city. In 1879, after the first revolutionary movements had been initiated, the Cortes granted representation to Cuba, as it had done to Porto Rico, but the elections were so controlled that the deputies were nearly all natives of Spain, and not of Cuba.

The further history of Cuba under Spanish rule is that of a series of revolutions. Beginning with the organization of the Black Eagles in 1827, one uprising followed another until 1895, when the revolution was organized which terminated only with the active intervention of the United States, three years later, and the final loss of Cuba and Porto Rico to Spain.

The United States had declared that it would not keep Cuba, and held to the promise. When the Spanish troops left, the United States took control, but turned over the island to the Cubans in 1901. In 1906 a revolution broke out, and the United States again held control until 1909. Cuba is a republic, with a President, a Vice-President, a Senate and a House of Representatives. The population is about 2,500,000. Havana, with 350,000 inhabitants, is the largest city. The island has some important minerals, valuable forests and much fertile soil. It is one of the leading sugar-producing countries of the world.

JAMAICA, THE CHIEF POSSESSION OF GREAT BRITAIN

After the English occupation of Jamaica, Port Royal and Kingston, the chief ports, became the headquarters of the cruising buccaneers, rovers and slave traders. Jamaica was always the best customer for African slaves, which indicated the rapid growth of sugar plant-

ing. From this cause came the greatest disturbances in its history. Many of the blacks escaped to the mountains, where they lived in savage communities. These runaways, known as maroons, would descend from their strongholds and raid the settlements. An irregular warfare was carried on for many years. Finally peace was concluded by offering the maroons a reservation on which they would not be disturbed so long as they did not molest the whites. There were also violent uprisings of the slaves, even after they had been freed, in 1833. These were put down with a cruelty inspired by a fear of their vast majority in numbers.

THE EXPORTS OF JAMAICA

Throughout all the British West Indies the emancipation of the slaves caused heavy losses to the sugar planters. Together with this event came the discovery that sugar could be extracted from the beet as well as from cane; these two causes together seemed at one time to threaten the complete ruin of the West Indian planters. The sugar industry has never quite recovered. To-day bananas are Jamaica's chief export, followed by sugar, coffee and rum. Tobacco is of growing importance. As yet only a fourth of the island is under cultivation. Of the total population, numbering about 800,000, only 16,000 are white. There are about 20,000 Asiatic coolies, mostly Hindoos, in Jamaica, who have been imported as plantation laborers. Many smaller islands are attached to Jamaica, for governmental purpose. Kingston, the capital, is an attractive city.

THE BAHAMAS DURING THE CIVIL WAR

The Bahamas, neglected by the Spaniards and infested with buccaneers and pirates during the days of much fighting, became a Crown colony in 1787. The settlers were largely Loyalist colonists from the United States, who were expelled during and after the American Revolution. It was the contraband trade, brought by the Confederate blockade runners during our Civil War, that gave these little islands, and especially Nassau, their chief port, their first prosperity. Trade is still largely with the United States, consisting mostly of sponges, hemp, and pineapples.

In the Lesser Antilles, Great Britain possesses most of the islands. Of these

Barbados is the most important, though it is only twenty-one miles long and fourteen across. For its size it is one of the most thickly populated spots on the face of the earth. The inhabitants number 200,000, of which only one-tenth are whites.

THE LAKE OF ASPHALT

Trinidad is a large island, close up to the mainland of South America. At first it was thinly populated by the Spaniards, but after one of the several wars between them, Spain ceded it to England. The population is the same as that of Barbados, but hardly one-eighth of the land

El Dorado, the land of gold, which led so many Spanish grandees across the Western Ocean. The Dutch were the first to make permanent settlements here, but when Holland was dragged into French politics, in 1796, she lost to Great Britain the Cape of Good Hope, Ceylon and the Guiana settlements.

English settlers from Barbados attacked these Dutch settlements and took them with little difficulty. They were restored in 1802, but the next year Great Britain again took over what is now known as British Guiana. The colony is to-day of about the same area as Great Britain. Its government is still much



At first glance one could think that this street might be anywhere in North America, but it is really in Port of Spain, on the island of Trinidad. The city is one of the finest towns in the West Indies, and the scene shows a part of the European quarter. The building on the right of the picture is the English church.

is under cultivation. On the island is a great lake of asphalt, and this is one of the chief articles of export. Here, too, the sugar industry has been injured, but of late, cacao, coffee and tobacco have been exported at a growing rate.

MAINLAND POSSESSIONS OF GREAT BRITAIN

British Guiana and British Honduras, though mainland possessions, belong with the British West Indies. Both were brought under the Crown during the wars of the French Revolution. Guiana was the name given to a vast area east of the Orinoco River. Sir Walter Raleigh first penetrated these wilds in search of

the same as when held by the Dutch. Its staple crops are sugar and cotton, and the negro element is very large.

British Honduras arose out of settlements of wood-cutters, who migrated in the eighteenth century to the coast of Yucatan. They claimed to be independent of the rulers of Mexico. From about 1756, England began to extend her protection to these settlers about Belize Bay, though she did not dispute the rights of Spain. Belize was the port of shipment for the dye woods and other timber. There a form of local self-government grew up. In 1798, Spain attempted to expel these intruders, but the settlers,

aided by English sailors, repelled the assault and attained a sort of independence recognized by both powers. British Honduras is now a Crown colony of Great Britain, and prospers because of its wealth of mahogany.

THE GOVERNMENT OF THE ISLANDS OF THE WEST INDIES

The governments of the British West Indian colonies do not give much power to the people. The reason is simple. It is the great number of negroes, who do not know how to govern themselves. In the Bahamas, the negroes have little or no political power. The government of the colony is chiefly in the hands of a governor, an executive council and a legislative council appointed in England. There is a legislative assembly of twenty-nine members, elected by the people, but only those having property can vote. Few negroes vote and the electors are mainly merchants and property owners.

In Jamaica the negro outbreak of 1865 led the planters to desire the stronger government of a Crown colony. In 1884, a part of the legislative council was made elective. The Barbados House of Assembly is very old. Trinidad and Tobago, a small neighboring island, have a legislative council in common, nominated by the Crown; they have never had representative institutions.

FRENCH TERRITORY IN THE WEST INDIES

Though France can no longer be rated as a colonizing power in the West Indies, she still possesses two important islands in the Lesser Antilles, Martinique and Guadeloupe, besides French Guiana on the mainland. The first of these will be remembered because of the great eruption of Mt. Pelee. The island is about forty-five miles long and fifteen across, but extremely mountainous. Martinique, as the centre of French life and activity in the West Indies, was much disturbed by the French Revolution. A serious outbreak of the negroes occurred in 1831, but was suppressed. All free persons were given the political rights of French citizens, and in 1848 all the slaves were emancipated. The present population is estimated at 185,000, of which 10,000 are whites and the remainder colored. Like Guadeloupe, Martinique is a department of France, with one senator and two deputies to represent it. The governor

and the council are appointed by the home government. French Guiana has a population of about 50,000. The chief products are cocoa, sugar, ginger, coffee and fruits. It has valuable gold mines,

We remember Martinique chiefly because it was the birthplace of the unhappy Empress Josephine, and the ruins of the house are still to be seen. Off the coast of French Guiana is Devil's Island, where Captain Alfred Dreyfus was confined for four terrible years, from 1895 to 1899.

THE DUTCH WEST INDIES

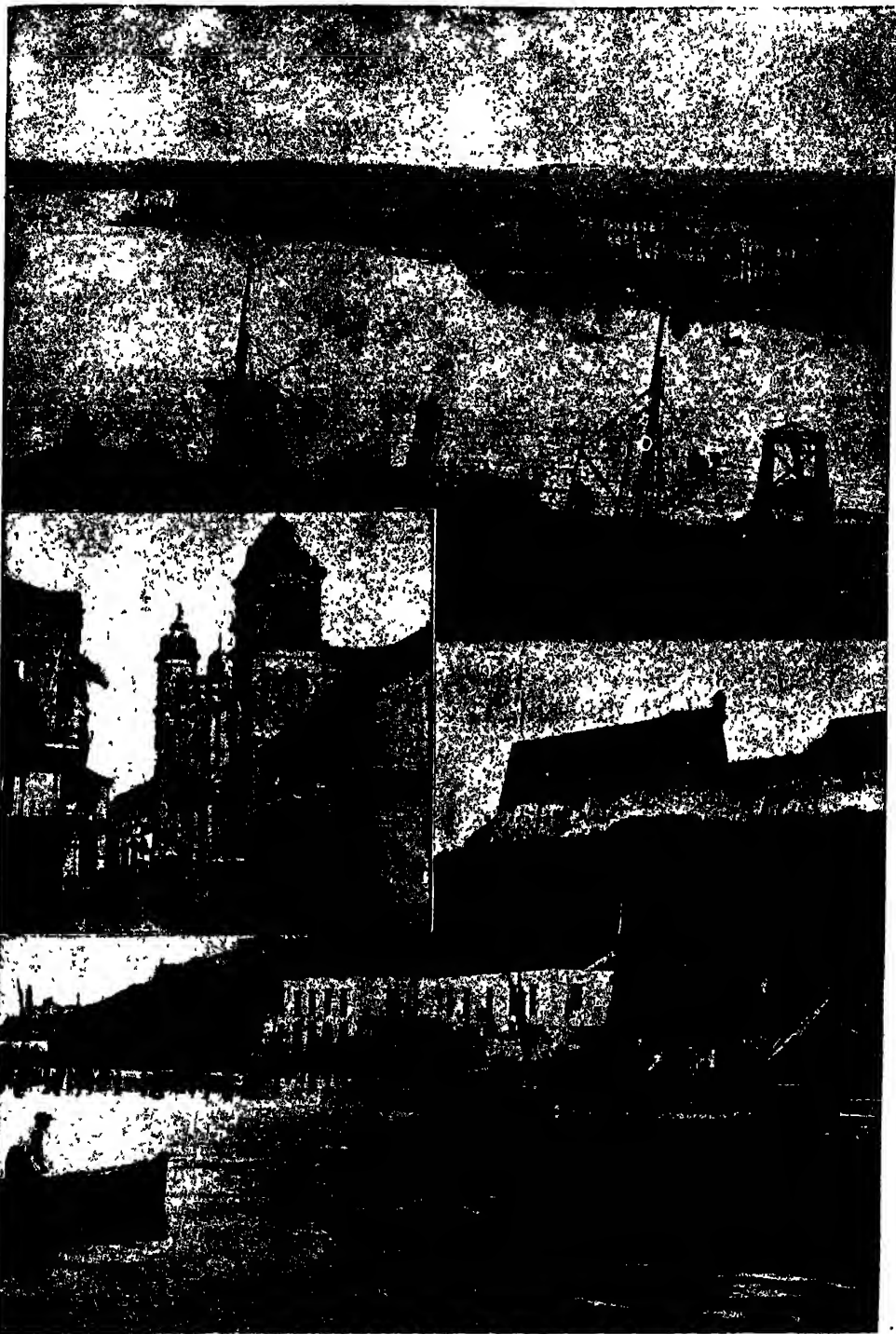
Curaçao, off the coast of Venezuela and west of Trinidad, is the headquarters of the Dutch colonies in the West Indies. Not only the neighboring islands of Buen Aire and Aruba, but Saba, St. Eustatius and part of St. Martin in the Northern Caribbees, are dependencies of Holland, administered by deputies of the governor of Curaçao. This island is about forty miles long, with a surface of arid plains. The inhabitants number about 30,000, of which about a third are negroes. There is a deficiency of water, and the people are compelled to store rain water. Corn, cotton, sugar, tobacco and fruits, phosphate of lime and the well-known liqueur, curaçao, made from oranges, are the chief exports.

NEW TERRITORY OF THE UNITED STATES IN THE WEST INDIES

Up in the northern part of the Lesser Antilles, close to Porto Rico, are three islands which are of special interest to Americans. They are St. Thomas, St. John and St. Croix. St. Thomas, the most important, is only thirteen miles long and three wide. It is still a centre of traffic, as it has been since the early days, and nearly all of its 15,000 people, of whom nine-tenths are black or colored, live in and about the seaport, Charlotte Amalie. The buccaneers and pirates were not slow in finding this sheltered bay and using it as a refuge. In 1671 the Danish West India Company took possession and established a trading station. St. John and St. Croix together have about as many people as St. Thomas, but their trade is small. The United States has desired these islands because of the need of a harbor for warships in the West Indies, and in 1916 purchased them for \$25,000,000. We tell more of them in another place.

THE NEXT STORY OF COUNTRIES IS ON PAGE 6097.

SCENES IN HAVANA, THE CAPITAL OF CUBA

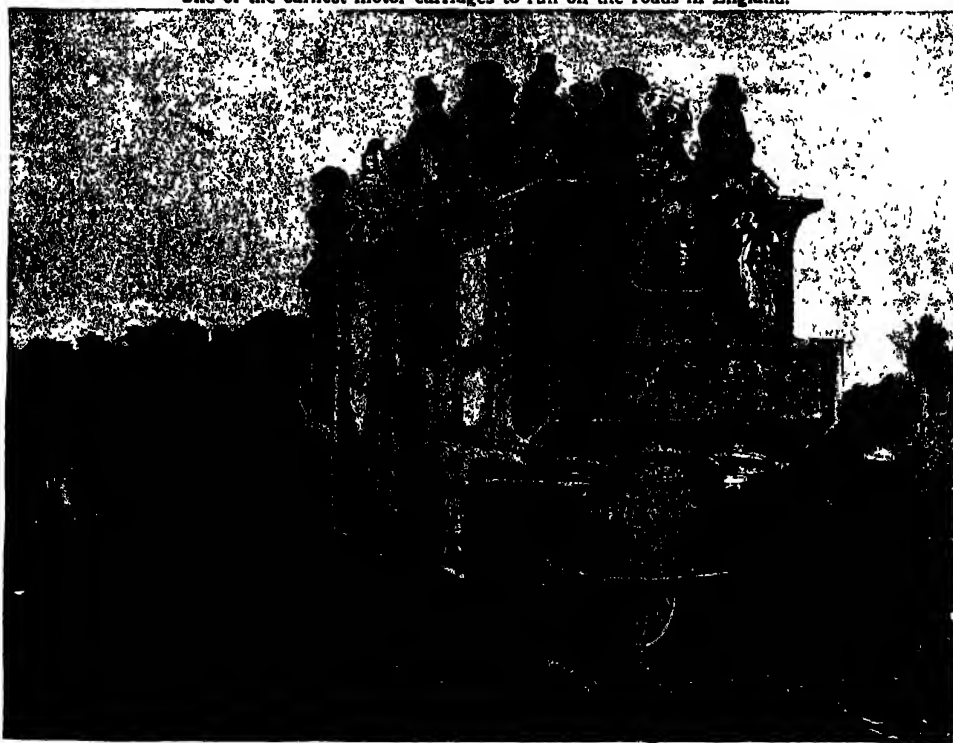


Havana harbor, seen in the first picture, is protected on the west by Punta Castle, and on the east by Moro Castle, and La Cabaña, which is shown at the bottom. The cathedral, built in 1764, where the bones of Columbus rested for many years before they were removed to Spain, is shown in the small picture.

THE MOTOR-CAR THAT RAN LONG AGO

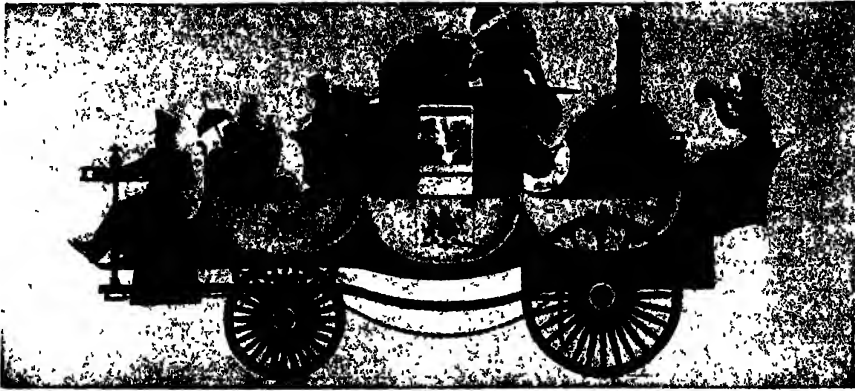


One of the earliest motor carriages to run on the roads in England.



A wonderful steam motor carriage that ran between London and Birmingham in 1832.

The Book of FAMILIAR THINGS



A wonderful motor coach driven by steam more than eighty years ago.

TRAVELING LONG AGO HOW OUR ANCESTORS TRAVELED

MOST of us have learned how railway traveling came into being, and we remember, therefore, the strange difficulties our ancestors had in getting about the country in the days before the iron horse.

But many of us have not thought, perhaps, of the troubles which lay in the way of getting from city to city, or about the cities themselves, in the olden days such as those in which Shakespeare lived. A man who was setting out on a journey of a hundred miles by road thought it so perilous an adventure that before starting he would sometimes sit sadly down and make his will, and bid farewell to all his friends, in the belief that there was every chance of his never seeing them again. And the dangers of town travel were quite as real and alarming as those which were supposed to await the daring man who traveled from London to York by the stage-coach.

The streets were not lighted, and after dark the smaller thoroughfares teemed with robbers, who killed or robbed as a means of livelihood. Highwaymen, mounted on swift horses,

CONTINUED FROM 5980

prowled about the outskirts of London, and footpads infested the streets of the city itself. Therefore, except for those who were rich enough to keep a coach, to venture into the streets at night was a serious undertaking not to be dreamed of unless link-boys, carrying flaring torches, walked before the party to light up the way. Iron link-stands supporting a ring, in which the link or torch might be placed, may still be seen at the doorways of old London houses.

Except on horseback or by coach, there was no way of getting about London by day save by walking or taking a boat on the Thames. It was not until the year 1605 that the first cab ever seen in England appeared on the streets of London. A few old coaches which had been sold by private owners were bought, and sent forth for public hire. They were called hackney coaches. There is some doubt as to the meaning of the name, but the belief is that they were so called because the first cabs started from Hackney. The new idea became very popular. It was a great thing for Londoners of that age to be able to go

into the streets, call a cab, and ride to the place to which they desired to go.

To those who could afford to pay the fare, it was as if the magic carpet had suddenly been placed at their disposal. Ladies could go out in pretty dresses and shoes, saved at least from the horrible condition of the streets and roads, which at that time were a disgrace. The London highways were then full of pits and holes, in which collected mud and filthy water and garbage thrown from shops and houses. The new carriage might bump and jostle as it crashed over these uneven ways, but, at any rate, the rider would arrive dry-shod and with costume unspoiled.

But the public never gained an advantage of this sort without a great outcry from somebody or other. The Thames boatmen were furious at the success of the cabs, and one of their number, John Taylor, called "the water poet," wrote an angry pamphlet against the cabs and the people who used them.

Soon the success of the coaches induced an old retired sea captain, named Baile, to set up coaches specially built for the purpose. He did not buy the old, worn-out family coaches, but built smaller and lighter vehicles, which were a great improvement. Owing to the badness of the roads, these required two horses to pull them; but it was a great thing to get them at all, for here was a new idea—carriages made specially for the convenience and comfort of people who could not afford to have their own.

The new cabs took up their position where St. Mary's Church now stands in the Strand, which therefore became the first public cab-stand in Great Britain. The new vehicles were a great success, and they were speedily copied by other men.

THE KING WHO TRIED TO STOP THE CABS

All sorts of objections were raised against them. People at that time could not understand that the right to ride should be enjoyed by any but the rich. People complained that the cabs wore out the roads—these wonderful roads which were already full of chasms and pitfalls. They did not see that they must build better roads; they simply cried out that the cabs must be prevented from running. Charles I. took sides with the enemies of the cab, and

issued an order declaring that the cabs were unnecessary and dangerous, and that their numbers must be limited.

WHEN PEOPLE WERE CARRIED ABOUT IN SEDAN CHAIRS

But even King Charles could not sweep away so desirable an aid to travel as the cab without offering something in exchange, and the substitute that he offered was the sedan chair. This had just been introduced into England from Europe, and took its name from the town of Sedan, in France, where it was first used. It was a vehicle like a small cab, with side windows and entrance through a hinged doorway at the front, but it had no wheels, and men were to carry it on two stout poles. The occupant could raise the roof if he wanted to stand. A Court favorite was to have the sole right of providing these chairs and of drawing the money which they earned.

People cried out against the new invention. They hated the thought of men being employed as beasts of burden. But the idea soon became popular, and people had sedan chairs built for private use all over the country. Alike in Paris and London the sedan-chair man soon became an institution. The vehicles themselves were often beautifully painted, and they continued in use up to a century or so ago. At Peterborough they were used until 1860; Exeter had one until 1879; Newcastle until 1885; and Bury St. Edmunds until 1890. They are still in use in the public baths at Ischl in Austria, and in the city of Bath, England, as a mode of transit to the medical baths. The chair can be taken into the bedroom and the invalid carried to the baths without exposure to the outer air. The poles are so arranged that the chair may be carried up and down stairs.

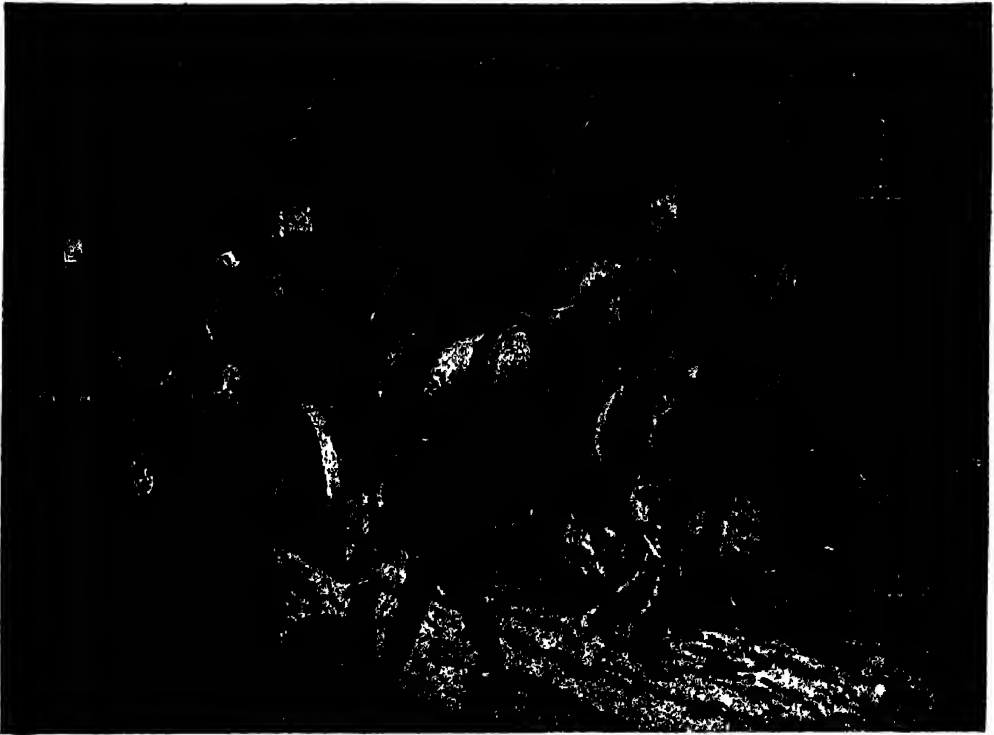
If we live near New York, or go for a visit to that wonderful city, we can see two sedan chairs in the Metropolitan Museum. Both of them were made and used in Europe in the eighteenth century.

Happily, the sedan chairs did not kill the cabs. Heavy taxes were put on these vehicles, which were so much disliked by Charles II. that he issued a proclamation forbidding them to be used at all. No notice was taken of this proclamation, and, after the Great Fire had led to the making of wider streets, the number of cabs increased very rapidly.

THE COMING OF THE HANSOM CAB

The great change came with the appearance of the hansom cab. Many different types were tried. Some opened at the back, with the driver sitting perched high up above the door; others had the driver's seat at the side, and in all sorts of queer positions. It was Joseph Aloysius Hansom, an architect, who designed the cab which bears his name. The hansom was patented in 1834, but was afterward greatly improved. It was the favorite vehicle for traveling about

been hung by long straps from the four corners to pillars erected upon the under carriage. After the first few months the omnibus did not pay, and Paris saw no more omnibuses for another 150 years. Soon after their revival in Paris, a Frenchman named George Shillibeer gave London its first buses. They ran from Paddington to the Bank of England, at a fare of one shilling for the whole journey, and sixpence for the half journey. The service started on July 4, 1829, and the vehicles, first called omnibuses, came to be known as "shillibeers," after their



HOW VISITORS FROM THE COUNTRY ARRIVED IN LONDON A HUNDRED YEARS AGO

London until the motor-cab appeared, and was also much used in the United States.

But cabs are for the few, and the hansom brought no advantage for the masses of the people, who could not afford to take a cab. For these came the omnibus, first seen in London in 1829. It was not an English invention. The first bus appeared in Paris in 1662. The idea originated with Blaise Pascal, the great writer, and was carried out under favor of Louis XIV., the "Grand Monarch." It was in his reign that steel springs were first applied to wheel carriages. Before this the coach had

inventor. Shillibeer provided papers for his customers to read in the bus, but a rival owner did still better by fitting up bookshelves in his buses containing the newest books of the day. As dishonest people stole so many books, however, the library had to be stopped. Poor Shillibeer was ruined as a bus-owner, partly through rivalry with the railways, and partly through unfair treatment by the Government, which taxed him without mercy. He afterwards started a business in funeral coaches, and so "shillibeer" became the name of the hearse. But for that, buses would probably have been called shillibeers to this day. Many

HOW OUR ANCESTORS WENT BY TRAIN



First-class passengers in one of the old-time railway trains in England.



Second-class passengers entering their carriage in the old days



Third class passengers traveling in open trucks in the first days of railway trains.

THE FIRST BUS, FIRST CYCLE, & FIRST TRAIN



The first omnibus in London, built and run by Shillibeer, a famous coachbuilder, in 1829.



The earliest kind of bicycle, in which the rider ran along the ground as he sat astride.



The first train in England, with a man riding in front carrying a danger flag.

people remember the time when buses drawn by horses were the chief public vehicles in New York.

With many improvements, buses drawn by horses flourished until motor-buses were introduced. There were then nearly 4000 horse buses in London, and to run these some 40,000 horses were kept.

London was very slow in adopting the idea of running public vehicles on rails laid on the street. Though such cars drawn by horses had been started in New York in 1832, it was not until nearly thirty years later that an American, George Francis Train, introduced the plan into England. It met with so much opposition on the part of horse owners that it failed. A little later horse cars were again introduced. Then came cars drawn by steam engines, until finally electric cars have become common.

TRAVELING IN AMERICA MANY YEARS AGO

In the early days before the Revolution the people in this country traveled chiefly in their own carriages, or on horseback, as the roads were so bad in many places that no wheeled vehicle could be drawn over them. Often the woman, going to town, to church, or to visit a neighbor, rode on a horse behind her husband or her father.

Two-wheeled vehicles called gigs or chaises were common years ago. You may read about the "Wonderful One-Hoss Shay" in another volume. Generally in the old days people rode in farm wagons without springs. Thousands who went to settle the great West loaded their household goods into wagons which came to be known as "prairie schooners." The women and the youngest children rode while the men and older children walked. At night camp was made on the prairie. When several families were moving together the wagons were arranged in a circle at night, for protection against the Indians.

A few coaches ran between the principal towns, which, we must remember, were little more than villages. Most of them were dirty and uncomfortable as well as very slow. The trip which we now easily make in an hour was then a day's journey, and sometimes required a part of the night as well. Very often the passengers had to get out to lighten the load when going up hill, and even

had to push or tug at the wheels when the coach stuck in the mud.

Some of the best coaches, however, made excellent progress where the roads were good, and could be depended upon to arrive on the minute. Horses were frequently changed. When the coach drove up, fresh horses were waiting, the tired team was quickly unhitched, the fresh one was put in, and the passengers were again on their way in less time than is now required to change engines on a fast train. Nearly all of these stage lines, however, went out of business with the coming of the railroad, though in some parts of our country, not yet reached by the railroad, a few old-fashioned stage lines still continue in operation.

Some of them have been changed to automobile lines. Indeed the motor car has opened up some country in the West not yet touched by railroads, and into which horses could not be taken very well on account of scarcity of food for them. This is the so-called "arid region," where very little rain falls. In much of this region, however, the soil itself is excellent and needs only water to produce large crops. In some places great dams have been constructed across rivers flowing from mountains near by, and the water is conducted to the dry region. Other streams will in the future be turned into the region, and the area of the desert will grow smaller.

In the cities of the United States buses were common in the early days, and still run in a few towns where there is not enough business to pay for putting down rails. But this country has been ahead of any other in furnishing cheap methods of getting about. After the horse cars were introduced, the cable cars followed. These cars were drawn by a moving cable running underground between the tracks. A "grip" attached to the car would seize the cable when the gripman on the car moved a lever and the car would be drawn along. When the lever was moved another way, the grip let the cable loose and the car stopped.

The electric car, which was first successful in Richmond, Virginia, in 1888, has, however, succeeded all other means of cheap transportation. Electric cars run on the streets of every city in the United States and Canada. Many towns are joined by these electric

TRAVEL IN THE COUNTRY AND IN THE CITY



In such wagons as these the journey across the plains toward the West was made before the days of railroads. These wagons, with their cloth top supported by wooden bows, were often called "prairie schooners." In them were packed the household goods, and the mother and smaller children, while the father and older children walked. Usually several traveled together for defence against the Indians.



Before the days of electric cars, one of the chief modes of travel in American cities was the stage, drawn by two or three horses. In the old days they were sometimes placed on runners in winter. This stage, which has been preserved, once ran on the streets of New York and was one of the favorite methods of reaching Central Park.

Pictures by Brown Bros



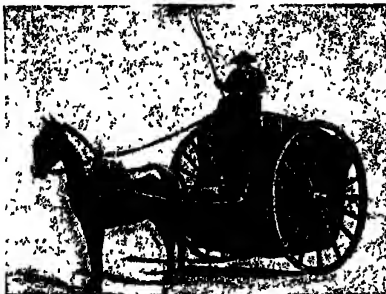
THE FINE COACHES IN WHICH THE RICH TRAVELED LONG AGO

railways and thus farmers can go to town whenever they wish.

Think what these changes have meant to city and country alike. They enable men to live at greater distance from their work, often in more healthful places. Without them our cities would be more crowded, and intercourse with our friends more difficult.

One reason why so many boys have left the farm has been the loneliness. The country car line and the telephone have done much to remove the disadvantages of country life. When one can reach the neighboring town in a few minutes, the members of the farmer's family can feel themselves to be a part

of the great world. Every year many miles of rural trolley lines are built, and the mileage will continue to increase.



THE FIRST HANSON CAB

What the future will reveal as to methods of transportation one can only guess. Perhaps the gyroscope car which runs on one rail, and about which we can read elsewhere in this book, will become quite a common sight. Perhaps trolley wires will be strung above the main roads, and vehicles

fitted with motors may run along the road though no rails are laid. It is quite possible that we shall all use flying machines. Who knows?

* THE NEXT SECTION IS ON PAGE 5146.

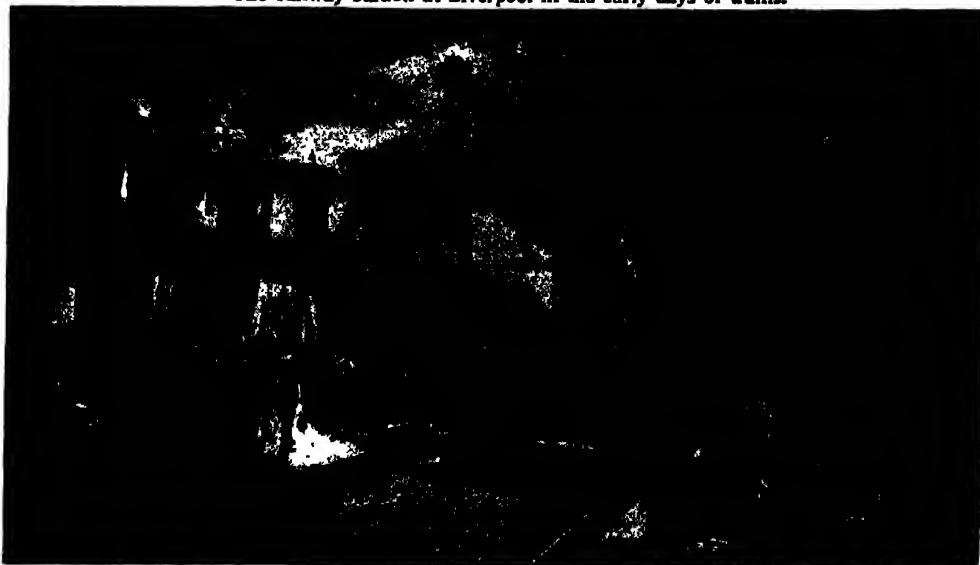


THE SLOW WAGONS IN WHICH THE POOR TRAVELED LONG AGO

A RAILWAY STATION IN OLDEN TIMES



The railway station at Liverpool in the early days of trains.



King Louis Philippe of France entering a train at New Cross Station, London, in 1844.



The opening of the Glasgow and Garnkirk Railway in 1831.

RIDING HORSES IN THE WILD SEA WAVES—A SEASIDE SCENE 2,000 YEARS AGO



Greek warriors riding their war-horses through the surf—"on the sea-beat coast, where hardy Thracians tame the savage horse."
This splendid picture suggestive of the magnificent friezes of ancient Greece, is by Mr. W. Frank Calderon, owner of the copyright.

The Book of NATURE



A striking picture of horses hard at work.—"The Forest Team," from painting by N. H. J. Baird.

THE STORY OF THE HORSE

EVERY one loves a horse, and admires him in action.

Whether he is an Arab, or thoroughbred, eager for the race; a great Percheron or Clydesdale, throwing his weight against the collar, as he hauls a heavy load or draws a plough through the fresh earth, or a child's pony, as proud of his pretty trappings as his little rider, every line of a horse's body shows that he is built for strength and power.

Next to the dog, the horse is the most faithful and intelligent four-footed friend we have, and we have none that has given us truer service, or can show greater devotion to his owner. Even among the nations that despise the dog as unclean, the horse is loved for his faithfulness and intelligence, and a tired and hungry rider will always see that his patient horse is cared for before he attends to his own wants.

Scholars have taken special pains to trace back the history of the horse. Their search has carried them far back, beyond even the picture records of the cave men, among the fossils of animals that had died out even before the cave men lived, and they are able to tell us more about the horse than about any other animal in the world. It is a very interesting story that they have to tell, and it is all the more

(CONTINUED FROM 6002)



interesting to us because it is believed that the early development of the horse began on our own continent. Fossil skeletons have been found, in Wyoming and New Mexico, which tell his life story from very early times.

HOW THE HORSE IS DISTINGUISHED FROM OTHER ANIMALS

Before we go any further, we must remember that all the members of the horse family are distinguished from other animals by their teeth and their feet.

The teeth of the horse and other members of his family are made of three substances, dentine, such as all teeth are made of, cement and a very hard kind of enamel. As you know, the horse lives chiefly on grass and grain; but his teeth are so made that he can grind this hard food into very small fragments. With constant grinding the teeth wear down, but they do not become blunt, for the cement and dentine wear away more quickly than the hard enamel, which projects just a little above the rest of the tooth and is always sharp enough to grind. The teeth are formed a very long way within the bones of the jaws. As they wear away they push upward and downward, and the bone of the jaw grows inward to fill the hollow spaces

left behind. By this wise provision of nature, the horse is able constantly to renew its teeth until it has reached the age of thirty or thirty-five years. The teeth have a peculiar form, and from this we are able to say that the elephant, the rhinoceros and the little hyrax, about which you may read on page 1011, are very distant relatives of the horse family.

Now we come to the peculiarity in the feet, which is a distinguishing mark of the horse family. You know that most of the animals walk on their toes, and the peculiar thing about the horse family is that its members have only one toe left to walk on. They have lost all the others.

THE HORSE'S ANCESTRY IS TRACED BY HIS TOES

The early ancestors of the horse must have had five toes, like all other animals, but from the beginning the horse had to save his life from his enemies by speed. Like all fast runners, he ran on the tips of his toes, which became very strong. Gradually, however, he threw all his weight on the centre toe. With each succeeding generation it became stronger and longer, the other toes were used less and less, and became weaker, and in time they ceased to grow at all. Now if you will look at the picture of the horse on page 6068, you will notice joints which are marked "knee," "hock" and "fetlock." They look as if they were in the legs, but really they are part of the feet. The "knee" and the "hock" are what correspond to our wrist and ankle bones, the "fetlock" is what was originally the upper joint of the toe. The nail has grown out into a thick hoof to protect the toe, and underneath it is provided with a soft cushion called the "frog," so that the heavy animal will not feel a jarring through his body when his weight is thrown on his toes as he gallops over the hard ground. All this is true also of the donkeys and zebras, the other members of the horse family, which all have teeth and feet of the same kind. These distinctions have made it possible to trace the history of the horse back with scarcely a break to his earliest ancestors. We can even say that the second and fourth toes were the last to be lost, and under the skin of the foot there are still to be found two small bones called splints, which are the last remnants of these toes. The pictures on page 3669 will help you to understand this.

EARLY ANCESTORS OF THE HORSE LIVED IN WYOMING

The earliest direct ancestor of the horse of which we really know anything, lived possibly three million years ago in the forests of a plain which is now part of Wyoming. It was a slender little beast, only sixteen inches high, and had four toes on its front feet, but only three on its hind feet. This little horse has been given the pretty name of the *cohippus* or "dawn horse." It was descended, students are certain, from an animal with five toes on each foot, which was the ancestor also of the rhinoceros, the tapir, and perhaps the rodent families, but no fossils of these earlier five-toed ancestors have yet been found.

The world in those days was a very different place from what it is now. The climate everywhere was much warmer, and moister; there were no dry plains, but there were many swamps; there were seas where now there is dry land, and land where now there are seas. North America was probably joined to Asia, in the region of Bering Strait, and there was no sea between Arabia and Africa. It is important to remember this, or we shall wonder how horses found their way to the Old World, part of which is really younger than the New World in which we live.

Even before the time that the *cohippus* lived, some of its ancestors had wandered across Asia into Europe. Part of the skeleton of a near relative of the *cohippus* has been found in Great Britain, but all the members of this part of the family died out, or perhaps were killed by beasts of prey. Later on Great Britain became an island, and no horses reached it until they were brought by man.

The little *cohippus*, too, had many enemies,—strange, fearsome, dragon-like beasts still lurked in the forests, and there were fierce, four-footed animals for which it made a sweet morsel. Only the strongest, most intelligent and swiftest of the little horses could escape from their foes.

Hundreds of thousands of years passed. The old enemies of the horse died out, and new ones appeared. Still it steadily grew larger and stronger, and more like the horses we know. First it lost the fourth toe on the front foot, and we speak of it as the three-toed horse. Next the centre toe became so long that the other toes hung helpless on each side, and at

last these helpless toes disappeared. Different names have been given to it by scholars in the different stages of its life, but we shall not ask you to remember any more.

Meantime the world had been changing. Mountains like the Alps and Pyrenees grew up; the swamps dried; and there was a great deal of high, dry ground, where before there were only low forest-covered plains. The horse found that by keeping to the high, dry ground he could escape his enemies of the swamps. He learned to feed on the coarse grass that began to cover the plains. His teeth changed so that he could grind it up, and as they grew longer, his head became larger and stronger so that it could hold these enormous teeth. His feet and legs lengthened to give him speed, his neck grew longer so that he could reach down to crop the grass, and by degrees he became very much like the wild horses that have been brought from Asia to our zoos.

WHEN ALL THE HORSES IN AMERICA DIED OUT

By this time horses had spread, probably from America, over the high plains of Asia, Europe, and the north of Africa. In America there were troops of horses of many kinds. Their fossils have been found everywhere from Alaska down as far as Florida. There were large horses and small ones, heavy horses and light ones. But, before the beginning of the Ice Age, something happened, no one knows what, and every horse on the continent of North America disappeared. The sea had destroyed the bridge of land that once stretched across the Bering Sea to Asia, so that none could cross, and there were never again any horses on this continent until the white men came. It was even thought that no horses had been native to the country, but recently their fossil remains have been found where they died, and from these their history has been told. Not long ago there were many wild horses in Australia, but these were descended from animals that escaped from the settlers. None of the early horses ever reached Australia.

As time went on horses became very numerous in the Old World, and the different branches of the family grew to be very unlike each other. Some of them were heavily built, with coarse necks, heavy heads, and the stiff upstanding

manes that we call hog manes. Most of these coarse, ugly horses lived in central Asia, and on the plains of Europe. Drovers of these horses still exist on the central plains of Asia, and some of them were found in Russia at the beginning of the last century. In the forests of Europe, some small neat horses lived, and the descendants of these horses are found, it is said, among the ponies of Norway and Ireland and the western Hebrides. A third kind of horse had long, fine legs, a long, neat, well arched neck, large brain, large eyes, broad forehead and a long, neat, pointed head. It is believed by men who have made a study of the subject that this horse developed in the north of Africa, and from it the famous Arab horses and the Barbary steeds are descended.

In later times, through the agency of man, all these families of horses became mixed. With careful breeding, many different families have evolved; but they are all descended from the three families of which we speak. Our large, heavy cart horses are most like the coarse, heavy-headed, heavy-limbed horses of Asia, but the lovely Arabian horses, with their long, sweeping tail and silky mane, and our beautiful, intelligent, fiery thoroughbreds are descended chiefly from the slender-limbed, neat-headed African horse.

THE HORSE BECAME THE FRIEND AND SERVANT OF MAN

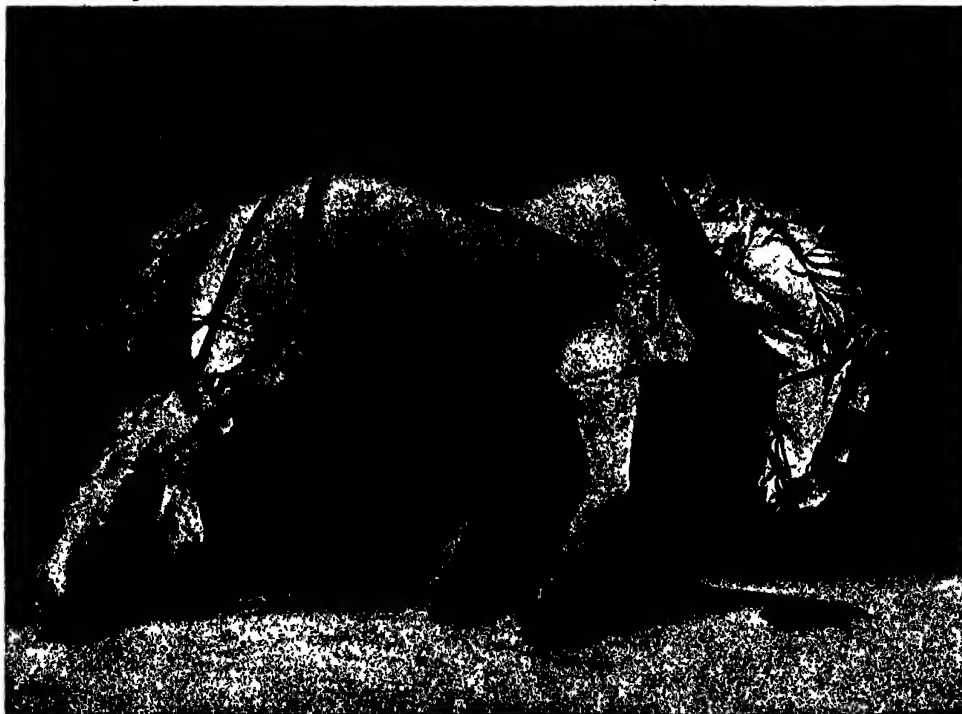
When man came into being, the horse gained a new enemy, and one who could fashion weapons with which to slay him, and make traps to ensnare him. In one place in Europe, which was the haunt of early man, the bones of thousands of horses have been found, where they were made into a shelter. We know, therefore, that our early ancestors found in the horse one of their chief sources of food, and from hunting him for food, it was an easy step to tame a friendly animal like a horse.

We cannot tell who first used the horse as a beast of burden, or who, long after he was tamed, first learned to yoke him to a chariot. It is natural for man to love animals, and there were times perhaps when ancient men trapped a foal with its mother, and saved it for a pet and plaything for his children. Such a pet, except in time of famine, would be spared, and so in time perhaps a race

THE TOWN HORSE AND THE COUNTRY HORSE



"THE JOY OF LIFE"—A PICTURE OF COUNTRY HORSES, BY LUCY KEMP-WELCH



"HARD LABOR"—A WONDERFUL PHOTOGRAPH OF A TOWN HORSE

This photograph of a horse in a city street is taken from "The Amateur Photographer"; the picture of the country horses is published by permission of the Autotype Fine Art Company, Limited.

FRIENDS IN SCOTLAND'S FARTHEST NORTH



"VIKINGS"—THE SPLENDID TYPE OF HORSES IN THE NORTH OF SCOTLAND
From the painting by Edwin Douglas, by permission of the Autotype Fine Art Company, Limited.



SHAGGY COMRADES—THREE LITTLE PONIES FROM THE SHETLAND ISLES
From a photograph by W. Reid.

of tame horses grew up about the rude dwellings of our savage forefathers.

But it was long, long after this that the horse was put to use. The cave dwellers who lived about fifteen thousand years ago, made pictures of the hognosed horse, on pieces of bone and on the walls of their caves. Some people have thought that some of these pictures show traces of a primitive harness, but this is not likely. It is now thought that the Libyans, who lived in the north of Africa, were the first people who learned to use the horse. It is believed that these people trained the beautiful North African horses to draw chariots, and used them in battle against their enemies, four thousand years ago, or more. The Egyptians owned horses at an early date, and used them in the same way as the Libyans. Indeed, it is believed that they got them from the Libyans. About the same time the Assyrians began to use the horses that came from Asiatic steppes, but it is thought that they were trained, and brought down for the Assyrian armies by tribes who lived further north. These people are thought to have been the first to learn to ride the horse, and this is all the more likely to be true because their descendants, the Turcomans and Mongols, have always been noted horsemen.

Before they got the horse, the Assyrians had tame donkeys, and so had the Babylonians and the Egyptians. We read in the Bible, in the ancient book of Job, that Job had a thousand donkeys. Abraham had large numbers of them, and it was donkeys which the sons of Jacob brought down to Egypt to carry back the grain that was to save them from famine. Probably they were used to carry burdens on their backs much as they are used in our Western mountain region, under the name of burros. The donkey, however, though it is patient and willing, has not the intelligence or the strength of the horse, and has never been held in the same honor.

Once the horse had been trained for battle, it was soon found that a nation that had no horses could not hope to stand against a nation that had them, and the use of chariots and of cavalry in warfare soon spread. The Egyptians do not seem to have known how to ride, but the Assyrians both rode and drove, and both these people have left us records of

their horses on their pictured walls. These show that Egyptian horses were fine, like the Arabian horses, while the Assyrian horses had the heavy head, and short, stiff mane of the Asiatic horse. The Greeks, who loved horses, had both kinds. Their poets sang about them, and their sculptors made some of the greatest sculptures of horses that have ever been known.

By the time of the Romans, all the peoples of Europe had horses. Even in Britain Julius Caesar found, to his cost, that the people had numbers of horses and chariots. How these horses reached Great Britain and Ireland is not known. They were probably taken across the Channel and the Irish Sea in open boats, just as the Norsemen afterwards brought their horses to far-off Iceland.

The British horses spread northward through the islands. In the south they were quite large; but in the north, where living was hard, and fare poor, they became stunted, and their coats grew long and shaggy to protect them from the winter cold. In this way a new type of horse arose, and from them have come the dear, shaggy little Shetland ponies that children love.

WHERE THE ARAB HORSES WERE FIRST FOUND

You will notice that all this time we have said little about Arab horses, and this is because there were none. There were wild donkeys in Arabia, but no horses, until they were brought over from Africa, less than two thousand years ago. They thrived in Arabia, however, and when, centuries later, the Saracens set out, from Mecca, on their career of conquest, they had plenty of swift, strong horses, and were able to sweep everything before them.

The Arabians tried to keep their beautiful horses to themselves, but in the seventeenth and eighteenth centuries, a few were brought to England, and it is from these that the beautiful English thoroughbreds and hunters have come. Our thoroughbreds were originally descended from the English thoroughbred, but lately some Arab horses have been brought to the country direct from Arabia.

And now we must go back a little way to find out the origin of the powerful drayhorse. We owe the drayhorse to the agency of man, and originally he was not meant to be a drayhorse. In the days

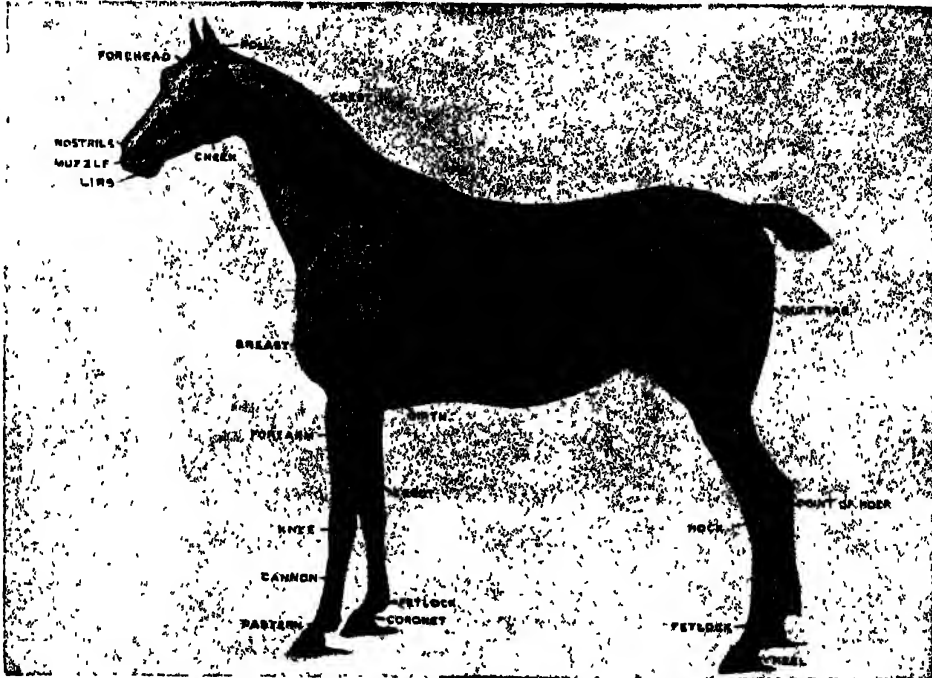
OUT FOR A WALK WHEN THE WIND BLOWS



"AN APRIL DAY"—BY LUCY KEMP-WELCH

of chivalry, when knights rode to battle, or in a tourney, covered from head to foot in armor, it was no small steed that could carry them. So they began to breed more and more powerful horses, that could carry mail-clad riders and their armor as well. In time of peace, or on a journey, the knights rode on small horses, called palfreys; but when the hour of battle came, they mounted their great war horses. Charging at a gallop, they met together with a mighty

fine horses of which they were expert riders, and troops of beautiful wild horses roamed and galloped over the plains? They came by sea, and the Spaniards brought them. The knights and men at arms would not think of fighting on foot. The Spaniards knew they had much fighting before them, and they actually brought their horses over in their uncomfortable, inconvenient ships. Some of these horses escaped on both continents. They multiplied rapidly, and the



THE DIFFERENT PARTS OF A HORSE AND THEIR NAMES

clash of lance on armor, and many a knight and horse went rolling on the field never to rise again.

When the wars were over, or when they were too old for battle, these heavy horses were used to draw the plough. When carriages first came into use they were very heavy, clumsy affairs, for which strong, heavy horses were needed. As better roads were made, heavy drays and wagons came into use, and magnificent Clydesdales, Percherons and other powerful horses were used to draw them.

HOW THE HORSE CAME BACK TO AMERICA

Now some reader asks, if all the American horses died out, how was it that, when the West was settled, the pioneers found that the Indians of the West had

troops of Indian ponies and mustangs that the pioneers found were their descendants.

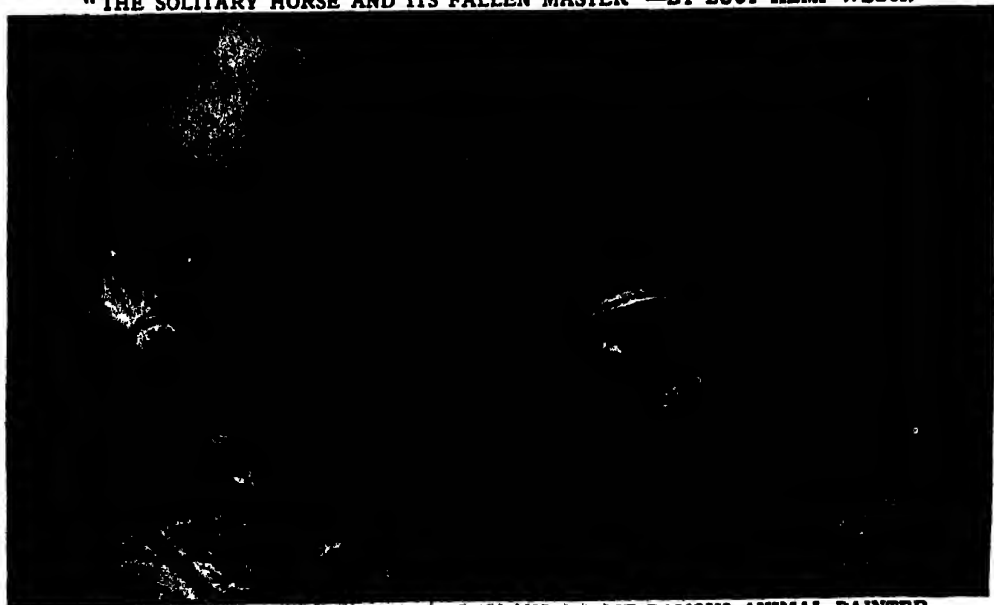
From the names of the various kinds of horses we can tell pretty well where the different types have been developed. The Clydesdales, of course, came from Scotland, the Suffolk Punch from England, the Percherons from France. Belgium is famous for heavy horses. Ireland has long been noted for fine hunters, and England for race horses. Apart from the descendants of the wild horses the horse that is most distinctively American is the trotter; a light horse that trots very rapidly. It is usually harnessed to a sulky or a light wagon, and covers the ground with amazing speed.

THE NEXT NATURE STORY IS ON PAGE 6241.

THE MORNING AFTER THE BATTLE



"THE SOLITARY HORSE AND ITS FALLEN MASTER"—BY LUCY KEMP-WELCH



A FAMOUS PICTURE BY LANDSEER, ENGLAND'S MOST FAMOUS ANIMAL PAINTER
These pathetic figures of the war-horse—the innocent sufferer in man's quarrel—are by the greatest English animal painter
of the past and the greatest English horse painter of to-day.

WHERE THE MISSISSIPPI IS CHAINED AND SET TO WORK



At Keokuk, Iowa, the course of the Missouri up, now grown to be a large stream, is checked by one of the great dams of the world though not one of the highest. From the Illinois shore in the background the concrete dam stretches over four fifths of a mile to the power house in the centre and then turns down stream toward the locks you see to the right, through which vessels may pass. The plant can deliver 120 000 horsepower, and it will be possible to increase this amount considerably.

Photograph by Anschütz

The Book of THE UNITED STATES

WHAT THIS STORY TELLS US

THIS story tells how the great Mississippi River, the longest river in the world, is born in a little lake in the hills of Minnesota, and flowing down through the heart of the American continent some 2,500 miles, empties at last into the Gulf of Mexico in the south. Many large towns and cities are built upon its banks, chief of which are St. Paul, Minneapolis, St. Louis, Cairo, Memphis, Helena, Vicksburg, Baton Rouge and New Orleans. The river flows through the richest bottom land in the United States, extending as it does over thousands of miles, where corn and wheat and cotton and sugar-cane and many other important crops are grown. The Mississippi River was first discovered by De Soto, and later explored by Joliet, Marquette, and La Salle, and was then in turn under the control of the Spanish and the French. The complete control of the river came to the United States with the Louisiana Purchase in 1803.

THE MISSISSIPPI

THE Mississippi River has been called the "main artery" of the United States. Like an artery in a man's body it pulses through the very heart of the American continent, receiving its water supply from the many tributaries that run like giant veins into every part of our broad land. From the source of its chief tributary, the Missouri, to its mouth is 4,200 miles, making this great stream the longest river in the world.

But if you will take your atlas you will see the real source of the Mississippi River proper is not with the Missouri in the Rocky Mountains, but in the hill country of Minnesota near a little group of lakes. For a long time Lake Itasca was considered to be the source. There are many lakes in the neighborhood, all connecting, though the reeds and the grass sometimes hide the little streams which join them together. Men who have surveyed the whole park now think that Little Elk Lake, seven miles beyond Lake Itasca, is the real source. The water passes through Lake Itasca. It is a pretty little lake encircled with green forests and often the tremulous laughter of the loon drifts over its quiet waters. In certain spots the water is broken by the lush, green grass of the rice that pushes its way up from the rich mud bottom. The stream that

CONTINUED FROM 5969

leaves the lake is no more than a creek, and is about twenty feet wide and two feet deep, and seems not an unworthy beginning of the mighty river it is to become..

As the river pushes on its way it becomes broader and more tranquil, but when it arrives at St. Paul and Minneapolis, the great manufacturing cities of the northwest, it is still a very moderate sized stream. At Minneapolis the river takes its first foaming leap over the falls of St. Anthony and for a little way the waters become a thunderous, roaring, impressive torrent.

Between the sturdy bulwarks of the Minnesota and Wisconsin bluffs the river makes its way. It is a lovable stream here, clear and swift and cool, unclouded by the tearing of the banks on the broader river below. Below, the bluffs are wider apart, and the river swings first against one and then against the other. Between the river and the bluffs the land is covered with trees, principally natural oak woods, poplars, beeches, elms, maples, and willows, with farmhouses hidden here and there among the trees. These houses, on the whole, look prosperous.

THE RIVER IS HARNESSSED AND
MADE TO WORK

In Iowa the beautiful farming country rolls away on either side. At

Keokuk a wonderful dam to supply power has been constructed. This is one of the largest dams in the world, though not one of the highest. It furnishes much water-power. At Hannibal, Missouri, beside the growing river, we come to the country of Mark Twain. Here, great rugged bluffs rise along the water edge, and beyond the green, dotted pastures roll away to the hill country inland, where there are farmhouses, and churches and patches of forest trees. "The house the humorist lived in still stands and is much the same as it always was—a stumpy, two-story, clap-boarded dwelling." You can find also the "hill where Tom Sawyer and Huckleberry Finn used to dig for treasure with much enthusiasm, expecting to find a brass pot with a hundred dollars in it, or a rotten chest full of diamonds."

WHERE THE MISSISSIPPI AND THE MISSOURI JOIN

About twenty miles above St. Louis, the Great River receives the water of the Missouri, itself an immense river, and larger than the Mississippi River to the point where they join on their way to the Gulf of Mexico. Soon we see no more of the high bluffs for a time, but the river runs through the flat lands.

From the city of Cairo, Illinois, to the Gulf, the river is generally higher than the land which lies away from the stream. It has built a bed and banks for itself out of the vast quantities of mud, sand and silt it has brought down from above.

THE TREACHEROUS CURRENT OF THE RIVER

From here on, the current of the Mississippi is a thing to be reckoned with. "To the landowners of the river valley the waters seem a very demon of destruction, eating away the banks and flooding the low-lying farmlands, sweeping all before its swift, silent current. In the flood season, landholders on the river never know but they may awake one morning to find their fair acres a swirl of thick brown waters. One traveler through the Mississippi valley says that a hotel proprietor told him there was a 'heap of pretty country under water along the river' and one day he made a trip to an outlying village to see how the people fared in the submerged districts. They took the flood philosophically enough. He found they were in no danger, simply inconvenienced. Some of the land and

houses had not yet been touched, but the majority of the dwellings were quite Venetian and he hired a negro to row him about among them."

THE DREADED FLOODS AND THE LEVEES TO HOLD THEM BACK

To prevent these devastating floods the people have built up levees all along the banks, great earth walls, to keep the giant river back within its natural bounds. Along these levees, roadways are built in some places and back of them pleasant homes, neat and cosy and clean, with vines and shrubbery and shade trees growing about them. Sometimes the river rises above them, or one of them breaks, and then the whole face of the earth is covered with water.

To one class of the Mississippi people, however, the floods hold no terror,—the boat-dwellers; for them the river is a great everchanging highway, a bountiful fairy dream, full of change and fascination. From the logs afloat upon its surface they gather the wherewithal to build their homes. All the way from St. Paul to New Orleans, thousands of the water gypsies can be found, in all sorts of houseboats, varying in size and material according to the means or whims of the owners. Some of them are no larger than an ordinary skiff, with hooped-iron roofs covered with canvas, under which the people crawl for the night, while others are large, comfortable, and attractive. Sometimes they can be seen in flotillas of a score or more; at other times only two or three can be seen.

WHERE THE OHIO JOINS THE RIVER

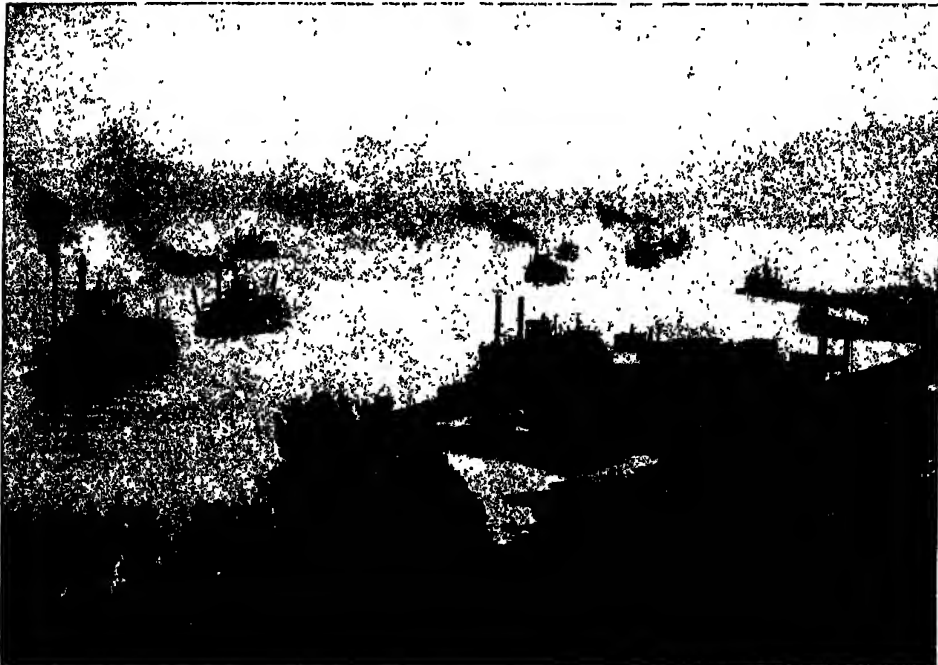
Cairo stands where the great Ohio River from the east joins the Mississippi, and no end of steamers, scows, rafts, tugs, houseboats, and skiffs float up and down. With such towns as this the river banks are studded. The air is filled with a sort of lazy hum of life and excitement. The Ohio carries down much water, and it too is subject to floods. It brings water down from the western slopes of the Alleghanies, and often raises the level of the Mississippi itself.

Kentucky first, and then Tennessee are on the east bank, and Missouri and Arkansas on the west. In Tennessee wide expanses of corn and cotton fields stretch away from the waters. In some seasons of the year the fields are alive with negro workers, hoeing the corn and cotton or

TWO VIEWS OF THE MIGHTY MISSISSIPPI



Though the Mississippi is one of the longest rivers in the world, it is not one of the deepest. In many places it is so shallow that a special form of boat has been constructed with the paddle-wheel at the back protected from snags and floating logs and not extending deep into the water. Such a boat can go where the water is very shallow. Notice also the levees which keep the river in bounds, here used as wharves.



The people of the Mississippi Valley are very much interested in the construction of a deeper channel, hoping that the commerce of the region may be increased thereby. In order to interest the national government a great excursion carried President Roosevelt and many other prominent men down the river, just before the end of his term of office. Here we see the procession of the boats. To-day the railroad along the river carries more traffic than the river, which it is planned to increase in the future.

picking the white fluff balls out of their round bolls. In the autumn when the bolls open the cotton lands along the Mississippi look as if they were white with a fall of snow.

As the river flows lower and lower in its course, the volume of its broad waters grows greater and greater. It washes away hundreds of acres of plantation lowland every year, sucking the silt from its sides, and hurling it onward and downward toward the sea.

Along the lower reaches of this river, the banks become farther and farther apart until to people standing upon one bank the other seems but a hazy line of blue across the swift, turbid waters. In the fall, the broad stream is alive with river schooners piled high with blue molasses barrels and bales of cotton; seen in the hot sun against the clear sky the cotton-piled steamers seem like floating mountains of white snow. In the fore-castle of the boats can be seen the throngs of negro workers, the handkerchiefs bound about their heads flaming gaudily against the snowy background of the cotton bales.

As the boats push their way up and down the muddy stream, their great smoke-stacks puffing out clouds of white vapor, they stop now and again at some levee along the shore. Then the air is filled with a clamor of banging barrels and oaths, as the negroes, under the direction of the foreman, load and unload the cargoes. The bodies of the toiling negroes glisten as if they had been oiled. The boats move slowly along from landing to landing, between monotonous naked walls of mud, rising sometimes as high as fifteen feet above the upper decks.

The army engineers are constantly struggling with the river. In some places it is too wide to give a safe passage for steamers, and here they narrow it. They build levees to keep it back, they strengthen banks to keep the river from eating them away. They pull out the trees it has drowned, so that they will not tear holes in the boats as they go up and down.

The last part of the journey is through a region almost tropical in appearance. The river twists along and from the upper deck of a boat paddling down stream one may see the variegated water-birds in the swamps behind the levees, and tall cypress trees festooned with Spanish moss

waving in the breeze and rising out of a real jungle of undergrowth. It is like another country.

As the river nears New Orleans, houses suggestive of thrift and prosperity spring up along the shore, and pretty white villages nestle among the tall trees. Here and there can be seen white-washed beams and sheds, negro cabins and hen coops, with broad sugar and rice fields rolling away behind them.

NEW ORLEANS, THE CRESCENT CITY, AND THE RIVER

At last the great river curves around the high-built levees and wharves of New Orleans, the Crescent City. Like New York City, New Orleans is one of the great commercial gateways of our continent. Even the river itself seems dwarfed by the monster steamers that plough its "dun waters." Old, bulky ferry boats, huge river dredges, and fruit vessels from the West Indies, Mexico and South America make their way to and fro; and in and out among them all push the slim, white Mississippi packets, looking like giant swans upon the turbid waters.

"Some classes of goods go at once into the warehouses, trains, or vessels, but others are stacked for a longer or shorter time on the wharves. There are vast quantities of great, clumsy cotton bales, rows of oozy molasses barrels, heaps of raw sugar in coarse brown bags, piles of lumber, great, odorous hogsheads of tobacco, and boxes and crates and bales of a thousand shapes and a thousand variations of contents. But cotton is more important than anything else, for New Orleans is the greatest cotton port in the world, and the storing, selling, and handling this product furnishes a livelihood to the majority of the city's three hundred thousand inhabitants."

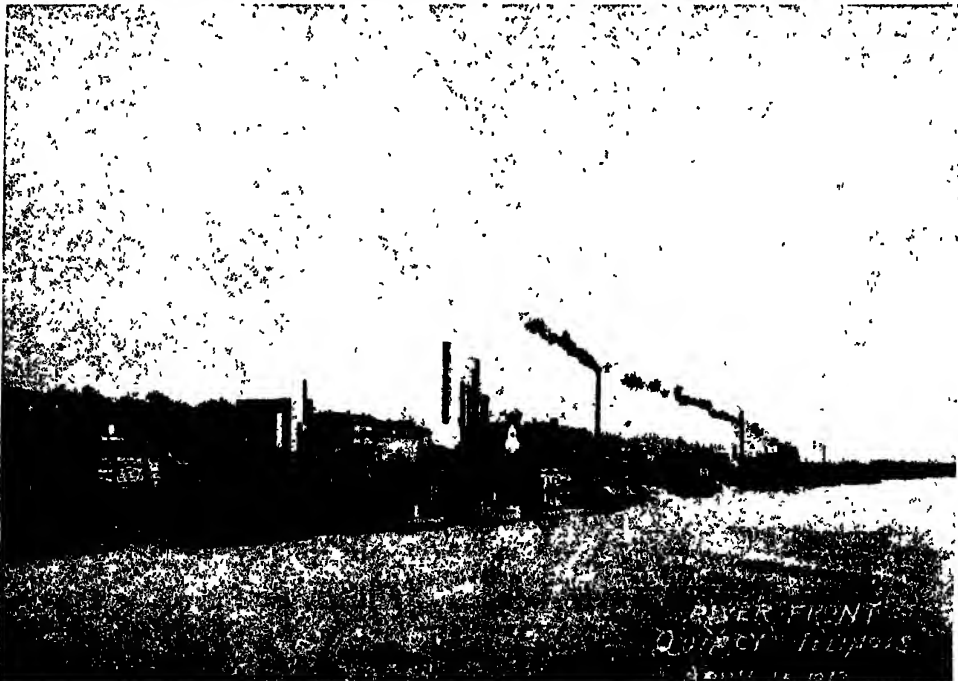
The city has nearly 400,000 people now. It is not at the end of the river, for the city is many miles from the mouth, or mouths. The river sweeps on, without heeding the great traffic of the Crescent City, and empties its silt-laden waters into the Gulf of Mexico, lying placid and deeply blue against the southern sky. The "Great River" builds its mouth out far into the open Gulf, dropping the silt it has carried as it meets the salt water of the sea.

THE NEXT STORY OF THE UNITED STATES IS ON PAGE 6135.

THE MIGHTY RIVER FLOWS SOUTHWARD

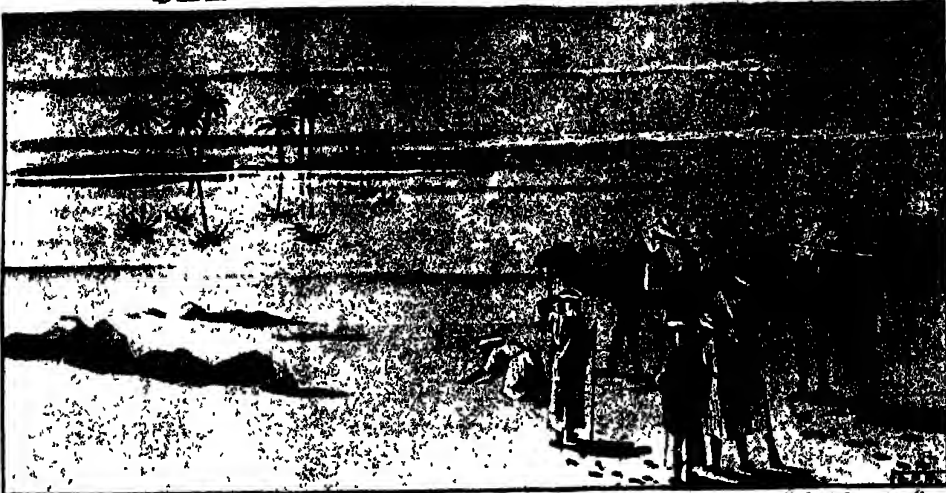


In its upper course the Mississippi runs through a wide valley, which is confined by high bluffs. These are usually at some distance from the river, though in its windings it may come close to them in some places. This is Lake Pepin, seventy-seven miles below St. Paul, and is so called because the river here widens out into a sort of lake twenty-five miles long. The scenery along the stream is varied.



Several hundred miles below the scene shown above evidences of man's presence become common and the mighty river has many cities and towns upon its banks. This is a part of the river front at Quincy, Illinois, a prosperous manufacturing city, as you can see from the many chimneys with their plumes of smoke. Pictures from Brown Bros.

SEEING WHAT IS NOT THERE



In this picture we see a mirage in the desert, a scene which does not really exist at all, but is actually a reflection. To the thirsty and weary travelers there appears to be water, which afterwards disappears.



This diagram explains the mirage. The layer of air, A, next to the hot sand, is warm, and different layers of air above, B, C, and D, have different temperatures, and therefore different densities. Now, beams of light passing through gases of different densities are refracted in varying degrees, and, as shown here, the trees, as well as being seen by direct beams, are seen also by the reflected beams as if reflected by water.



This picture shows a mirage at sea, where the conditions are the opposite of those in the desert, the colder and denser air being lowest. The light rays from the ship strike upon layers of different density in the upper air and are refracted downwards. When the densities vary much, images will be seen, some of them inverted.

THINGS TO MAKE AND THINGS TO DO



HOW TO ARRANGE A PAPER CHASE

THERE are few more healthful or enjoyable ways of spending a half-holiday than in running a paper chase. It is quite easy to get out a little way into the country from any big city by train, trolley, or motor car, and a good cross-country run cannot but be of benefit to any boy.

CONTINUED FROM 6012

Any number may take part in a paper chase, and a dozen would be a very good average number. Two of these represent hares, and the remainder become hounds. The method of playing is, of course, for the hares to run off across country, taking for preference a route not known to the hounds, and scattering torn shreds of paper as they run. A certain start—about ten or fifteen minutes—is given, and then the hounds go off in pursuit. Their object is to catch the hares—who, of course, keep together—and they follow the route by tracing the paper that has been laid. Obviously it is not wise to run on a windy day, as the paper is blown away and the track lost. In order to confuse the scent the hares often lay a false trail, which, after running some hundreds of yards, simply ceases. When the hounds reach the point where two trails diverge they often lose precious time by deciding upon and following up the wrong one. When it breaks off there is nothing to do but go back and follow the other.

The most suitable clothes in which to run a paper chase are: A sweater, such as is used for football, and flannel trousers.

Canvas or leather shoes, with plain leather soles, should be worn.

A large quantity of paper torn up beforehand, and packed in large canvas bags, which are slung in satchel fashion round the body. Each hare can take two bags if the run is to be a very long one.

Those who are going on the paper chase should get to bed in good time at night, for nothing spoils the running powers of a

young athlete like late hours at night. It may be tempting to sit up late, but we shall surely suffer

if we do so. Our muscles will not be what they should be, and our wind will fail us when we come to run over a long course.

For it must be remembered that a paper chase is not like a mile or half-mile race on a specially laid track. The man who can sprint a mile in fine style and record time is often no good for a long cross-country run. Speed is not the only essential. Staying power is most important, as we realize in a very true sense when first wind has gone. But if we are in fit condition, when second wind comes we get into a good stride and go along well.

The hounds should keep well together, in the early stages of the game, at any rate; it is quite a good plan for them to run in pairs as well as the hares. They can often help one another if they should get into difficulties or in the events of the run. For instance, in following up the two trails to discover which is the true one, a boy to each is enough and will save valuable time. Moreover, two pairs of eyes are better than one, and if the scent is blown away or hidden for a time it is likely to be more quickly picked up when two are seeking it. When they come in sight of the hares, each pair can see which shall have the honor of actually touching the hares first.

Sometimes a paper chase is run over routes that have not been traversed before, and in districts that are unknown to the runners. But as a rule the hares go over the course first, taking note of its opportunities and the lie of the land. It is important for them to know that they can find cover, and not be visible for long distances ahead. Then, too, they will try to make the home run as easy for themselves as possible.

GAMES TO PLAY IN THE TRAIN

IN the summer months most of us go for a holiday to the seaside or to the woods or mountains, and some of us take long journeys in the train that get very tiring unless we can find something definite to do to pass the hours. We cannot read all the time, and even if we have an inside seat we get tired of looking aimlessly out of the window. Even if there is a party of us, conversation flags after a time, and we long for our journey's end. And yet we need not get tired in the train for lack of something definite to do, for there are all kinds of games that can be played when we are tired of reading or of looking out of the window, and these will prove very interesting to the traveler as he speeds along mile after mile through the country.

THE LOOK-OUT GAME

AN excellent game for boys and girls, and one that develops our powers of observation, is to look out for objects in the fields and roads as we pass by in the train. Marks may be awarded for each object seen, and named, and different values may be given to different objects. Thus, to see a field with cows in it might be worth five marks, and a field with pigs ten marks. A church might be equal to three marks, and so on. If one of the competitors guesses that some distant object is a cow, and upon a nearer view it proves to be a sheep, five marks should be deducted from his score.

Marks should be awarded only to the competitor who first sees any particular object; that is, two competitors cannot each receive marks for the same church, or cows, or reaping machine, or haystacks, unless, of course, they should both call out the names at the same moment, when the marks would be divided equally between them.

The number of marks for each of the familiar objects of the countryside—cows, sheep, pigs, horses, ploughmen, reaping machines, churches, villages, ponds, rivers, streams, windmills, rooks, dogs, open gates, closed gates, farms, and so on—must be decided before we begin the game, and this provides plenty of occupation while we are passing out of town on the way to the country. In allotting marks to different objects, we should give the largest number to objects least likely to be seen, and the most familiar objects—such as churches, fields with cows, and so on—should receive the fewest marks. If the players sit at opposite sides of the car, and look out at the country on opposite sides of the train, the fun is more exciting than if all are looking out at one side; but we must take care not to annoy other passengers.

THE HOLIDAY A B C

A GOOD game for the train, and one that is quite appropriate to holiday-makers, is what may be called the Holiday A B C. Having decided who shall begin, a player gives quickly the name of some holiday place that begins with A. Then the next player asks: "What shall you do there?" And the first

player must give an appropriate answer, every word in which begins with A. Then the second player gives the name of a place beginning with B, and the third player asks: "What shall you do there?" to which number two must answer in a sentence of words beginning with B; and so on. Thirty seconds only are allowed for an answer, and those who take longer are given one mark for each second that they take over the thirty. At the end of the game the player with the fewest marks wins. Of course, after getting to the end of the alphabet, we can begin again, and give fresh places, if we are not tired of the game. The letters X and Z should be left out, as they are too difficult. Here are one or two specimen answers: I am going to the Adirondacks. What shall you do there? Attempt almost anything. I am going to Bar Harbor. What shall you do there? Breathe the briny breezes. I am going to Coney Island. What shall you do there? Catch crawling crabs.

A STATION GAME

ANOTHER good game which exercises the powers of observation, and at the same time provides plenty of excitement and fun, can be played after we leave any station which is a stopping-place. While the train is standing in the station all the players look about, and take as much notice of things as possible. Then, when the train has left the station, and five minutes have elapsed, we take it in turns to name any object that we saw at the station. Of course at first this is very easy, and we can go round and round again, each player naming one object which no other player has mentioned. But as the game goes on, it becomes harder and harder to think of things that were at the station, but have not already been mentioned by other players. The one who is last able to mention an object that no one else has thought of wins the game.

A LONELY TRAVELER'S PASTIME

OF course, if we are traveling quite alone we cannot play any of these games, but we need not find a railway journey being heavy on our hands. In such a case we should see to it before we start that we provide ourselves with a map of the route. Really good maps, showing all the interesting points, buildings, roads, and so on, on a very large scale, can be purchased for a few cents, and with one of these we can follow our route very closely.

If we have not been able to secure a detailed map of the journey, we can always get a railway time-table, and follow the route in the map of the line which is given in the time-table. In this case we shall find it very interesting if we fill in as many details as possible ourselves as we go along, putting a cross wherever a church occurs, a feathery mark for hills and rising ground, squares for farm-houses, circles for ponds and lakes, and other distinguishing marks for objects of interest.

HOW TO MAKE A BAG FROM A PAIR OF GLOVES

IT is easy to make a dainty leather bag out of old kid gloves. The gloves must be elbow length, or longer, because it is the "tops" that we are going to use, because although the fingers wear into holes, the tops always remain quite good. We shall have to ask one of our grown-up friends for a pair she has finished

with, and, if she has several pairs, we will choose the darkest color. Tan, brown, navy blue, or black are good shades, because they

do not soil; and as we wish to use our little bag as a purse, this is a consideration. Of course, if white gloves are available, we can make a small bag for quite a different purpose—an evening bag, just big enough for a handkerchief and a few little odd things when we go to the theatre or to a party. We notice that there is a seam down one side of the glove-top. With a sharp pair of scissors we cut down that seam—as from

A to B in picture 1—then we cut right across the glove nearer the wrist—as from B to C—and open the piece out flat. This will make one side of our bag, and of course we

get the other side in the same way from the other glove. We must be very careful to cut our two gloves quite even. We lay these pieces together back to back, and cut them straight, and we shall get two pieces each seven inches square. If they are big gloves we shall get a larger piece. When we have the outside ready we must think about a lining for our bag. A little strip of satin, silk, or wide, soft ribbon will do admirably. It should be of a contrasting color, or a good match.

For instance, our tan kid bag would look well lined with green or brown; if navy, lined with violet or mauve; if black, lined with white or scarlet. For the white bag it will be best to select a delicately colored lining—pale pink, palest blue, or white. These are only suggestions. We can, of course, choose for ourselves the color which pleases us best. We may wish it to match a friend's dress or hat. If there is a "piece-box" in the house there will certainly be several pieces to choose from. We also need a yard of silk cord, the color of our lining, for the handle and the "draw-up."

Having cut our lining a little larger than the kid, we must first run round three sides of it with the stuff laid *face to face*—see picture 2. The fourth side we leave open. Now take up

the kid, put the pieces *back to back*, and sew round three sides—these stitches are to show. If we look well at picture 3, which shows the

finished bag, we shall see how the ornamental stitches are managed. The kid has been turned in once, and a stout thread of embroidery cotton or coarse silk of the same shade as the lining has

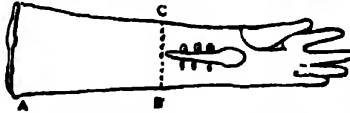
been used to sew the two edges together, over and over, all round the three sides. Care must be taken to keep the stitches as even as possible, and fairly big. When the three sides are done we slip the lining inside, just as it is, and turn in the edges of the kid and the satin at the top, or opening, of the bag, so that they fit together nicely, and then sew them over and over in the same way as the sides were sewn—see picture 4. Next we make a slot for the cord to run in, by a double row of stitching across the top, leaving about 1½ inches

for the frill. The slot should be half an inch wide, and must be neatly back-stitched top and bottom. We have now only to work a couple of eyelet-holes at each

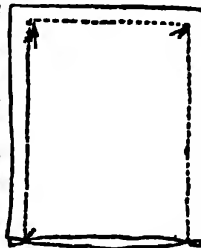
side, insert the cord with a bodkin, and the bag is finished. If our bodkin-eye will not take the cord, which is generally a trifle too stout to go through, we should sew the cord to the bodkin-eye with a piece of thread. The bag will open and shut more easily if we run the cord round twice instead of once. Then we are able just to give each handle a gentle pull, and the mouth of the bag closes automatically.

We need not, of course, keep to the square shape for our bag, for by wasting a little strip of kid we can get an oblong shape, which can be made just as useful. For instance, a bag made of black kid could be lined through with a piece of velvet and made just large enough to hold a pair of spectacles. This size is best made to fasten with a little pointed flap. On the bag we sew a glove-button, and to the point of our flap we make a loop of several threads of silk.

A leather case made in the shape of an ordinary envelope is useful to anyone who goes fishing. If lined through with a strip of oiled silk, it makes an excellent holder for flies and fine wire. This case should be fastened at the point of the envelope flap, in the same way as the bag for a pair of spectacles mentioned above.



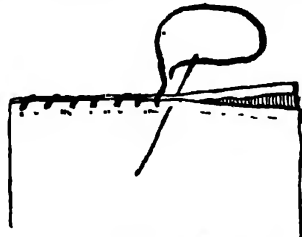
1. HOW TO CUT THE GLOVE



2. THE LINING



3. THE FINISHED BAG



4. SEWING OVER AND OVER

Now take up the kid, put the pieces *back to back*, and sew round three sides—these stitches are to show. If we look well at picture 3, which shows the finished bag, we shall see how the ornamental stitches are managed. The kid has been turned in once, and a stout thread of embroidery cotton or coarse silk of the same shade as the lining has been used to sew the two edges together, over and over, all round the three sides. Care must be taken to keep the stitches as even as possible, and fairly big. When the three sides are done we slip the lining inside, just as it is, and turn in the edges of the kid and the satin at the top, or opening, of the bag, so that they fit together nicely, and then sew them over and over in the same way as the sides were sewn—see picture 4. Next we make a slot for the cord to run in, by a double row of stitching across the top, leaving about 1½ inches for the frill. The slot should be half an inch wide, and must be neatly back-stitched top and bottom. We have now only to work a couple of eyelet-holes at each side, insert the cord with a bodkin, and the bag is finished. If our bodkin-eye will not take the cord, which is generally a trifle too stout to go through, we should sew the cord to the bodkin-eye with a piece of thread. The bag will open and shut more easily if we run the cord round twice instead of once. Then we are able just to give each handle a gentle pull, and the mouth of the bag closes automatically.

We need not, of course, keep to the square shape for our bag, for by wasting a little strip of kid we can get an oblong shape, which can be made just as useful. For instance, a bag made of black kid could be lined through with a piece of velvet and made just large enough to hold a pair of spectacles. This size is best made to fasten with a little pointed flap. On the bag we sew a glove-button, and to the point of our flap we make a loop of several threads of silk.

A leather case made in the shape of an ordinary envelope is useful to anyone who goes fishing. If lined through with a strip of oiled silk, it makes an excellent holder for flies and fine wire. This case should be fastened at the point of the envelope flap, in the same way as the bag for a pair of spectacles mentioned above.

LITTLE GARDENS FOR INVALIDS

HOW TO STUDY NATURE IN A BEDROOM

THERE came to my desk the other day an interesting letter from "A Shut-in of Many Years Standing," a touching letter, which set me thinking of the hundreds of boys and girls and grown-up readers of this book who spend their lives indoors, lying cheerfully and patiently all their days in bed or on a sofa, and complaining not half so much as some of those who live in health and strength. Here is a letter from an author, Miss Phoebe Allen, who has written many little story-books for children. She herself is an invalid, and knows what pleasure an indoor garden gives, and has written you a letter to tell you what you may grow in your own garden in the house. She writes:

"Do you think there are any invalids among your readers, boys and girls who can never go out of doors? And do you think

you could find room for a letter from a fellow shut-in, telling them how they may work at a garden in their own room? And how, besides raising ordinary plants, they may cultivate all manner of delightful rarities, such as orange and lemon trees, date palms and pepper plants, oak, laburnum, and walnut trees? And how they may make charming hanging gardens where, half-way between ceiling and floor, hyacinths and snowdrops will peep out of a globe of mossy verdure, and how even miniature lakes can be introduced into their pleasure-grounds and filled with water plants?"

Miss Allen has written us the story of her own indoor garden—though she has called it Roy's garden instead. Perhaps there are some R^{oy}s who *will* have gardens like Miss Allen's when they read about its quaint devices.

THE STORY OF ROY AND HIS BEDROOM GARDEN

EARLY and late, Roy worked in his little plot of ground, so that when, owing to the results of a bad fall, he was condemned to lie in bed for many months, we all pitied him for the loss of his garden. But, instead of pitying himself, Roy set to work, with Dora as his assistant, to turn his room into a garden. As it was late autumn, Roy started with bulbs. Some were planted in bowls of coconut fibre; crocuses, gold and purple, went into shallow saucers; some pet hyacinths had separate glasses; while snowdrops and the glory of the snow had each their respective boxes. Roy's joy, however, was the two green leafy globes which hung in his window; they were real hanging gardens! Outside, they presented a mass of curling foliage, with golden daffodils gleaming in the centre of one, and hyacinths of every hue peeped over the rim of the other.

"And they were only jolly big turnips to start with!" laughed Roy, going on to explain how, after slicing off the root end, he had hollowed out two-thirds of each turnip—leaving their walls about one inch thick—and planted bulbs inside. "Then I hung the turnips up topsy-turvy, with their root ends turned toward the sky and their leaves pointing downward. But, just because Nature meant them to grow upwards, the leaves adapted themselves to their altered condition, and, turning toward the light, grew up all

round the outside of the turnip, making it a regular green nest."

Then Roy showed an oak in its earliest babyhood, growing from an acorn slung on a stick across a wide-necked bottle filled with water, an infant horse-chestnut, sprouting bravely under the same treatment; four dark-leaved alnut seedlings, standing some ten inches high in the little tub they shared together—they wanted all the sun they could get; a flourishing young almond, also a seedling; and, lastly, a Cornelian cherry and a laurel, both raised from cuttings.

"And these are my foreigners," he continued, indicating a box in which several small pots were sunk in sand, with two bits of glass laid over the top, but fitting loosely in order to admit air.

Here were orange and lemon seedlings—*pip-lings*, Roy called them—date-palms, one over a foot high, raised from stones, a crowd of tiny pepper-trees, scarlet chili, elephant's trunk, and golden dawn.

"And now look at this!" said Roy gaily.

With a cube of turf one and a quarter inches square, and sprinkled with spores of the oak, parsley and beech ferns, and set in a flat saucer with a little water and covered over with a bell-glass, Roy had created a most successful fernery.

But I must hurry on, without pausing to dwell on the cyclamen and cacti, the luchsias,



geraniums, and other usual window plants, which were all flourishing under Roy's care, for I want to speak of the delightful miniature garden laid out in a box. This was like a deep butler's tray placed on a table, measuring about thirty inches square, lined with zinc, with an inner perforated zinc tray to fit at the top, this being well concealed by a thick upper layer of soil.

It had a real grass plot and gravel walk, a thicket of fairy roses—red and white, raised from seed—plots of pansies, double daisies, saxifrage and lobelia, miniature sunflowers, liliput nasturtiums, golden musk, dwarf mignonette, and clouds of sky-blue nemophila. Alpine farnies were there, too; while ivy geraniums hung over the walls of the garden.

"And now," said Roy, "look under that brown paper on the corner table over there; that's a great surprise for the little ones."

I raised the paper, and burst out laughing. Such a comical group met my eyes. There was a Jack-in-the-green sprouting mustard from every limb; a huge Teddy bear, with curly-leaved cross growing over him from the tip of his ears to his feet; while a very staid and solemn-looking mandarin, clad in a fine flowing robe of the new Chinese mustard, completed this trio of Greenlanders.

"It was nurse's idea," said Roy. "She took the baby's old toys and sewed them up in flannel, and then we damped them well and sprinkled them all over with the seeds. But we had to swing them on a line, you know, so that the mustard and cross would come up evenly all over, and now they're just perfect. I'm going to do a lot now for the children's hospitals. I shall do a whole Noah's ark, I think, and ships, and cannons, and all sorts of things," he added ambitiously.

A NEW BALL GAME FOR THE OPEN AIR

THE difficulty of playing ball games in small gardens is that the ball so often goes over the wall and is lost, or, at any rate, interrupts the game. If we are playing in the city we have often to depend on the kindness of passers-by to return us the ball quickly before it is stolen. There is an interesting ball game in which the ball is fastened up so that it cannot go over the wall. We fix in the ground a long pole, and from the top of this we hang a strong, flexible cord or string. To the end of the cord, which, when it is hanging down loosely, should reach to within about two feet of the ground, we fasten any kind of bouncing ball. Two players stand at opposite sides of the pole, and, with tennis rackets or wooden pingpong bats, beat the ball from one side to the other.

The game of post-ball is to beat the ball so that the string will wind round the pole until it is all wound up, and the one who does this first wins the game. One player tries to wind up the ball round to the right, and the other to the left. Apart from the skill that is required, there is a great deal of fun to be had in striking the ball backwards and forwards.

The skill comes in when we beat the ball in such a way that we make our opponent

miss it, while at the same time we are winding the string up for ourselves. On the other hand, we must try never to miss the ball ourselves; and when our opponent beats it round, we must drive it back, and thus prevent him winding the string round the pole. The game is most exciting, and its advantage is that it can be played in any garden. An ordinary tall clothes-line post will be a very good place to fix the cord, if the post is standing by itself sufficiently far away from trees and bushes and walls to give free play to the ball.

In order to fasten the string to the ball, it is best to make or buy a piece of strong string netting in which to place the ball, and the cord can then be fastened to this net.

Another way of playing is to have any number of players, who stand round the post at equal intervals and strike at the ball. The game is, as before, to wind

the string round the post, and all the players try to do this. Each strikes in turn, and if any hits out with the bat and misses the ball, he has to stand out of the game, until only one is left, and he is the winner. As often as the string is wound right up, it is unwound by beating the ball in the opposite direction, and the game is continued.



THE GAME OF POST-BALL

HOW TO KNOW IF A RULER IS STRAIGHT

IT is quite easy by a simple experiment to discover if a ruler has a perfectly straight edge. We place the ruler on a sheet of paper lying on a smooth surface, and, holding the ruler down firmly, rule a line against the edge with a well-sharpened pencil. Then we turn the paper right round, and, placing the edge of the ruler close against the line already ruled, we hold the ruler down firmly once more, and

draw a second line along the edge of the ruler near the first line. If the edge of the ruler is not straight, the slightest inequalities will be seen clearly by looking closely at the two lines. There will be places where they are not the same distance apart, and, of course, the nearer together the two lines have been drawn the easier will it be to detect any irregularity. The ruler must not move during the ruling.

A KALEIDOSCOPE THAT A BOY CAN MAKE

THE kaleidoscope is one of the most interesting of scientific toys, and there are few boys or girls who have not had one sometime. The name is made up of three Greek words which mean then "I see a beautiful image," and by means of the instrument an endless number of patterns, all beautiful in form, and all different from one another, can be made. As a matter of fact, so far from being a mere toy, the kaleidoscope is sometimes used by artists and pattern-makers in order to obtain new designs and patterns for carpets, wall papers, and other fabrics.

The usual form of kaleidoscope, which was invented by Sir David Brewster in 1817, is a tube in which two mirrors are arranged at an angle to one another; and between these mirrors fragments of colored glass or other colored objects are free to move about as the tube is turned round. Whatever position these colored pieces take up, they are reflected in the mirrors, and the multiplication of the pieces by reflection forms a regular design which, however irregular the colored fragments themselves may be, becomes very artistic and pleasing to the eye. The slightest shaking of the instrument produces new figures.

But the tube, with its arrangement of mirrors inside, is not essential, and there is a much simpler form of the kaleidoscope which every boy or girl can make at practically no cost, and with very little trouble.

First of all we take a piece of white cardboard, fairly tough in substance, 4 inches by $1\frac{1}{2}$ inches, and at one end of its greatest length we cut it to the shape shown at the top of picture 1. Then at A and B we cut small V-shaped nicks as marked in the diagram, and an inch from the bottom, at C, we cut a line $2\frac{1}{2}$ inches long, with a little line measuring one-eighth of an inch at each end, at right angles to the longer line.

Then, on the opposite side of the card, with a penknife, we lightly score the cardboard along the directions marked by dotted lines in picture 1. This is done so that the card may be easily bent along these lines. The diagram shows exactly how we cut and score the card. The dotted lines are where we score—that is, cut only slightly into the card—and the black lines show where we cut right through. The card forms the body of the kaleidoscope.

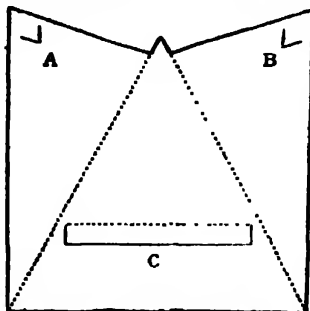
Now for the mirrors. We do not need looking-glass, but can use tin. We take two pieces of perfectly smooth and flat tin, 3 inches by $1\frac{1}{2}$ inches, and, with any ordinary metal polish that may be in the house, we rub and rub these until they are burnished and shine almost like silver-plate and reflect nearly as well as looking-glass.

Now, with a slip of gummed paper, we join the pieces of tin by hinging together two of their ends so that they can be opened at any angle, as in picture 2, taking care, of course, that the paper is stuck on the dull sides of the tin, and not on the sides we have burnished so brightly.

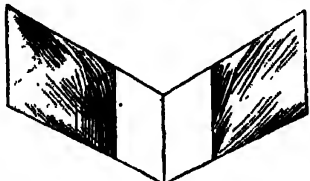
We are now ready to put our kaleidoscope together, and this is the way it is done: We first place the white card on the table in the position shown in picture 1, with the scored lines on the under side. Then we push up the little ledge, C, that we have cut in front, and turn up the two triangular flaps on either side along the scored lines, so that these will form upright sides. Now we take the folded metal mirror, and, opening it at an angle of about sixty degrees, we place it inside the card, so that the two nicks, A and B, in the cardboard sides come over the metal and hold it in position. The turned-up ledge in the front of the card will prevent the mirror from closing up, if we have measured its position correctly.

We now place some tiny pieces of colored cardboard of various shapes on the white card between the mirrors, and, holding the kaleidoscope as shown in picture 3, we let a good light fall upon the mirrors, when we see in them a beautiful design. As we shake the colored fragments about, the design changes with every movement. No matter how irregular the little pieces of colored card may be, a geometrical design will be formed, but this will be much more artistic and pleasing if the fragments of colored card are themselves cut into some regular shapes, such as circles, rings, triangles, s's, x's, and any others we care to make.

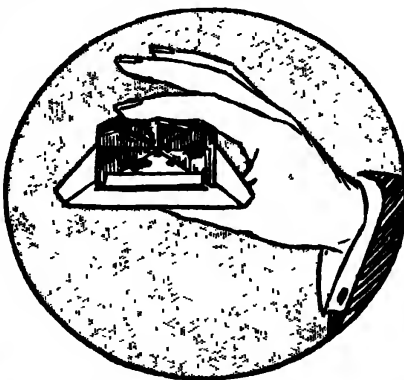
With a little practise we can cut cards to hold the mirrors at various angles, for according to the angle of the mirrors, so the number of times we see the colored objects reflected varies. Thus, when the angle is 120 we see the colored fragments three times; when the angle is 45 we see them seven times.



How to make the card.



How the mirrors are hinged.



The kaleidoscope complete.

HOW TO MEASURE A STREAM

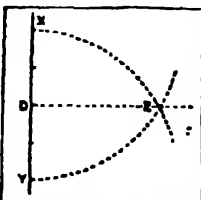
IT used to be thought that only a man who had served a long apprenticeship could do land surveying; but this is far from being the case, and any intelligent boy who cares to take a little trouble can find a great deal of interest and pleasure in measuring distances and heights, and even mapping out a stretch of country. What might seem one of the most difficult things to do—measuring the width of a wide river—is really quite simple, and will provide a very interesting occupation for boy scouts and others who like to get profit for the mind as well as pleasure for the body from a walk in the country.

The science of land surveying is a very ancient and honorable one, for it is supposed that it originated in Egypt, where it was necessary accurately each year to set up again the land boundaries washed away by the flooding of the Nile.

To measure the width of a stream we first of all choose a place where both banks are at about the same level and the stream is fairly straight. Then we select some tree or bush or stone, or other fixed object on the opposite bank, quite close to the edge, such as A in the picture. On our own side of the stream we mark off a straight line at right angles to the stream as at B C, in continuation of a straight line from A to B. This is done by placing a stick in the ground at B immediately opposite to A, and in moving back to C, taking care to keep the stick always exactly in front of the bush at A. We can mark the straight line B C by laying a string on the ground, if we have one, or by putting stones at short intervals.

Now from some point, such as D, not far from B, we mark a line D E at right angles to B C. To get the line exactly at right angles we

proceed as shown in the smaller diagram on this page. We measure off, say, two feet on either side of D in the line B C. This gives us the points X and Y. Then we take a stick—a fairly straight branch of a tree will do very well—and holding one end at X, which we use as a centre, we describe an arc of a circle. Now



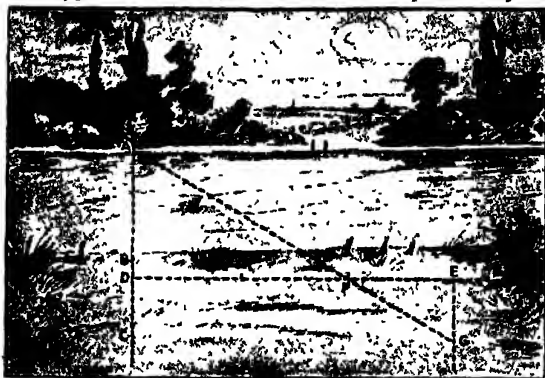
Making the angle.

putting the end of the stick at Y, we again describe an arc, and the point Z is where the arcs cut one another. At this point Z we place a stick in the ground, and another stick at D, and then moving along so that in our vision we always keep one stick exactly in front of the other, we are able to mark the line D E as we did the line B C. D E should be measured to about 30 feet, and we should mark the point F at two-thirds the distance, that is, at 20 feet, and put a stick in the ground.

Now from E we mark another line at right angles to D E, and we continue this till we come to a point G, where, looking across to our landmark on the other side of the stream—the bush at A—we see the stick at F exactly in front of it. Now, with practically no trouble at all, we can

find the width of the river, for we have only to work a simple proportion problem. As the line E F is to F D, so is E G to D A. D F is 20 feet, E F is 10 feet, and we will suppose that E G is 8 feet. Then our problem stands like this: As 10:20::8:D A—16 feet. From this figure we must deduct the distance B D, which we find, by measuring, is, say, 3 feet, and we have

13 feet as the width of the stream. This may not seem very interesting, but if the boys who read this page will try it for themselves they will find it a fascinating occupation. For practise we do not need a river; we can measure the width of a road or field.



An easy way to measure the width of a river.

YOUR PORTRAIT ON A SHEET OF NOTEPAPER

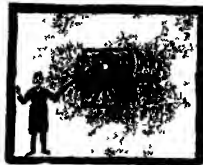
IF you want to have a joke with a friend, here is a very good way of doing it.

Take half a sheet of notepaper, fold it in two, so that the fold comes at the bottom. In the middle of this square draw a comic portrait inside a ruled space, measuring about 1 inch wide and 1 1/2 inches deep. Cut through the base and side rules, bend back the portrait, and on the paper showing through the opening draw a tripod camera. Then cut through the side lines

and the top line which coincide with the upper and side rules of the portrait, and pull the lower flap through so that it covers the portrait. On the left side of the front half of the folded paper draw a photographer in the act of pulling a string, which is carried across the cut to the lens of the camera, and the trick is ready, as shown in the picture. Face your friend, holding the folded paper in front of him, with your left hand gripping the front half and the right hand the back half. By a slight jerk backwards with the right hand, the comic face will be made to appear in the place of the camera.



The drawing on the notepaper.

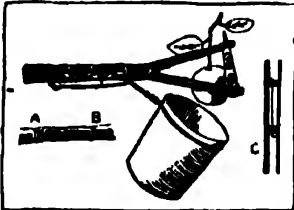


The trick ready.

HINTS AND TRICKS FOR ODD MOMENTS

AN EASILY-MADE APPLE-PICKER

IT is quite easy to make an ingenious apple-picker that will save us a lot of time and trouble when we are gathering the fruit in the orchard or garden. It spoils the apples to knock or shake them down, and it takes a long time to move our ladder about and climb all over the branches to reach every apple. But by means of the simple arrange-



ment shown in the picture we can gather the apples carefully and well. We get a forked stick, and across the fork we tie an old knife-blade, after sharpening the edge. Then we cut two small grooves in the stick, eight inches apart, as seen in the picture, at A and B. A long piece of fairly stout wire is then twisted round a tin can, and the end is wound round the stick in the grooves. We must be careful to fix our can so that it will catch the apples as the knife cuts them, or all our trouble will be lost. The apple-picker is then ready. If we want it very long, we can make the stick or pole as long as we wish by splicing it in the manner shown at C, binding round the join with wire.

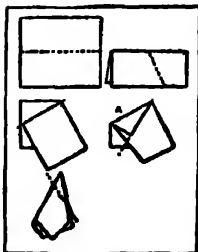
THE RABBITS' EARS

IF we were asked to draw three rabbits, and to give them only three ears between them, yet to make them appear as though they really had two ears each, no matter how clever we might be as artists, we should think that an impossible and ridiculous task had been set us. Yet such is not really the case, for, as can be seen by this picture, the drawing can actually be made and the conditions fulfilled. By a skilful arrangement of the three rabbits and the three ears, as shown in the picture, the little animals appear to be quite properly equipped with the right number of ears, although they have only three between them.



A STAR MADE WITH ONE CUT

IT would at first thought seem to be quite an impossibility to cut a five-pointed star out of



a square of paper with one single snip of the scissors, and yet it is quite easy to do so. Everything, of course, depends upon the method of folding the paper before cutting, but if the square of paper be folded exactly as shown in the accompanying diagrams, and then the folded paper be cut with one snip in the direction of

the dotted line in the fifth diagram, we shall

have a star. In folding the paper at the stage shown in the fourth diagram, so as to get that shown in the fifth, we must fold from the point A across to the right. In all cases fold across the dotted line—that is, when you have the paper opened out flat, as in diagram 1, fold across the dotted line to make diagram 2, then, to get the shape shown in diagram 3, fold across the dotted line in diagram 2, and so on to position 5.

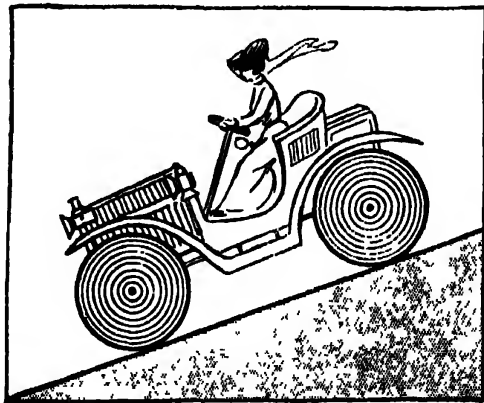
THE MAGIC WRITING

WE can have some fun with our friends by causing what seems to be magic writing to appear upon the surface of an ordinary looking-glass when it is breathed upon. Unknown to our friends, we write upon the glass with a piece of French chalk, and then we wipe out the writing with a soft cloth, such as a handkerchief. The writing cannot now be seen, but if we breathe upon the glass it will instantly become visible, and, to those not in the secret, will seem very mysterious and weird indeed.



THE WHEELS THAT TURN

HERE is a picture of a motor-car going along a hilly country road. There are no police traps, and the motor is going at a great speed. We can see that it is moving



by the way the wheels are going round. We may not think at first that the motor is really going at all, but if we put this book down flat on the table and look steadily at the centre of either wheel, with our eyes about a foot from the book, and then, without raising the book from the table, give it a quick circular motion, the wheels will appear to be going round rapidly. In another place in our book you will find another example of how our eyes deceive us, in spite of the old saying that "seeing is believing."

CONTINUED ON PAGE 616.

The Book of POETRY

A PROPHECY OF THE FUTURE

IN this poem, written nearly fifty years ago, John Townsend Trowbridge gives a very amusing account of the first American flying-machine. In the days when he wrote it, the hero was ahead of his time in being of the opinion "that the air is also man's dominion," but there are many to-day reaping the results of early work like his. Darius scorned to let the swallow and blackbird and wren know more than he knew. He believed that wings were just as necessary to him in earning his living as they were to the bee, and so he set to work and made some—with what result you will see!

DARIUS GREEN AND HIS FLYING-MACHINE

IF ever there lived a Yankee lad,
Wise or otherwise, good or bad,
Who, seeing the birds fly, didn't jump
With flapping arms from stake or stump,
Or, spreading the tail
Of his coat for a sail,
Take a soaring leap from post or rail,
And wonder why
He couldn't fly.

And flap and flutter and wish and try,—
If ever you knew a country dunce
Who didn't try that as often as once,
All I can say is, that's a sign
He never would do for a hero of mine.

An aspiring genius was D. Green
The son of a farmer, —age fourteen;
His body was long and lank and lean, —
Just right for flying, as will be seen;
He had two eyes, each bright as a bean,
And a freckled nose that grew between,
A little awry, for I must mention
That he had riveted his attention
Upon his wonderful invention,
Twisting his tongue as he twisted the strings,

Working his face as he worked the wings,
And with every turn of gimlet and screw
Turning and screwing his mouth round
too,

Till his nose seemed bent
To catch the scent,
Around some corner, of new-baked pies,
And his wrinkled cheeks and his squinting eyes

Grew puckered into a queer grimace,
That made him look very droll in the face,
And also very wise.

And wise he must have been, to do more
Than ever a genius did before,
Excepting Dædalus of yore
And his son Icarus, who wore
Upon their backs
Those wings of wax
He had read of in the old almanacs.

CONTINUED FROM 5987



Darius was clearly of the opinion,
That the air is also man's dominion,

And that, with paddle or fin or pinion,
We soon or late

Shall navigate
The azure as now we sail the sea
The thing looks simple enough to me;

And if you doubt it,
Hear how Darius reasoned about it.

"Birds can fly,
An' why can't I?
Must we give in,"
Says he with a grin,
"T' the bluebird an' phoebe
Are smarter'n we be?"

Jest fold our hands an' see the swaller,
An' blackbird an' catbird beat us holler?
Doos the leetle chatterin', sassy wren,
No bigger'n my thumb, know more than men?

Jest show me that!
Er prove 't the bat
Hez got more brains than's in my hat,
An' I'll back down, an' not till then!"

He argued further: "Ner I can't see
What's th' use o' wings to a humble-bee,
Fer to git a livin' with, more'n to me;—
Ain't my business
Important 's his'n is?"

"That Icarus
Was a silly cuss,—
Him an' his daddy Dædalus,
They might 'a' knowed wings made o' wax
Wouldn't stan' sun-heat an' hard whacks.
I'll make mine o' luther,
Er suthin' er other."

And he said to himself, as he tinkered
and planned:

"But I ain't gon' to show my hand
To nummies that never can understand
The fust idee that's big an' grand.
They'd 'a' laft an' made fun
O' Creation itself afore 'twas done!"

So he kept his secret from all the rest,
Safely buttoned within his vest;
And in the loft above the shed
Himself he locks with thumble and thread
And wax and hammer and buckles and
screws
And all such things as geniuses use;—
Two bats for patterns, curious fellows!
A charcoal-pot and a pair of bellows;
An old hoop-skirt or two, as well as
Some wire, and several old umbrellas;
A carriage-cover, for tail and wings;
A piece of harness; and straps and strings;
And a big strong box,
In which he locks
These and a hundred other things.

His grinning brothers, Reuben and Burke
And Nathan and Jotham and Solomon, lurk
Around the corner to see him work,—
Sitting cross-legged, like a Turk,
Drawing the waxed end through with a jerk,
And boring the holes with a comical quirk
Of his wise old head, and knowing smirk.
But vainly they mounted each other's backs,
And poked through knot-holes and pried
through cracks;
With wood from the pile and straw from
the stacks
He plugged the knot-holes and calked the
cracks;
And a bucket of water, which one would
think
He had brought up into the loft to drink
When he chanced to be dry,
Stood always nigh,
For Darius was sly!
And whenever at work he happened to spy
At chink or crevice a blinking eye,
He let a dipper of water fly

"Take that! an' ef ever ye git a peep,
Guess ye'll ketch a weasel asleep!"
And he sings as he locks
His big strong box:—

SONG

"The weasel's head is small an' trim,
An' he is leetle an' long an' slim,
An' quick of motion an' nimble of limb,
An' ef yeou'll be
Advised by me,
Keep wide awake when ye're ketchin' him!"

So day after day
He stitched and tinkered and hammered
away,
Till at last 'twas done,—
The greatest invention under the sun!
"An' now," says Darius, "hooray fer some
fun!"

'Twas the Fourth of July,
And the weather was dry,
And not a cloud was on all the sky,
Save a few light fleeces, which here and
there,
Half mist, half air,
Like foam on the ocean went floating by—
Just as lovely a morning as ever was seen
For a nice little trip in a flying-machine

Thought cunning Darius: "Now I sha'n't go
Along 'ith the fellers to see the show
I'll say I've got sich a terrible cough!
An' then, when the folks 'ave all gone off,
I'll hev full swing
Fer to try the thing
An' practise a leetle on the wing."
"Ain't goin' to see the celebration?"
Says Brother Nate. "No; botheration!
I've got sich a cold—a toothache—I—
My gracious!—feel 's though I should fly!"

Said Jotham, "Sho!
Guess ye better go."
But Darius said, "No!
Shouldn't wonder 'f yeou might see me though,
'Long 'bout noon, ef I git red
O' this jumpin', thumpin' pain 'n my head!"
For all the while to himself he said:—

"I tell ye what!
I'll fly a few times around the lot,
To see how 't seems, then soon 's I've got
The hang o' the thing, ez likely 's not,
I'll astonish the nation
An' all creation
By flyin' over the celebration!
Over their heads I'll sail like an eagle;
I'll balance myself on my wings like a sea-
gull;
I'll dance on the chimbleys; I'll stan' on
the steeple;
I'll flop up to winders an' scare the people!
I'll light on th' libbe'ty-pole, an' crow;
An' I'll say to the gawpin' fools below,
'What world's this 'ere
That I've come near?'
Fer I'll make 'em b'lieve I'm a chap f'm the
moon!
An' I'll try a race 'ith their ol' bulloon."
He crept from his bed:
And, seeing the others were gone, he said,
"I'm a-gittin' over the cold 'n my head."
And away he sped,
To open the wonderful box in the shed.

His brothers had walked but a little way
When Jotham to Nathan chanced to say,
"What on airth is he up to, hey?"
"Don'o,—th' 's suthin' er other to pay,
Er he couldn't 'a' stayed to him to-day."
Says Burke, "His toothache's all in his eye!
He never'd miss a Fo'th-o'-July,
Ef he hedn't got some machine to try."

Then Sol, the little one, spoke: "By darn!
Le's hurry back an' hide 'n the barn,
An' pay him fer tellin' us that yarn!"
"Agreed!" Through the orchard they creep
back,
Along by the fences, behind the stack,
And one by one, through a hole in the wall,
In under the dusty barn they crawl,
Dressed in their Sunday garments all;
And a very astonishing sight was that,
When each in his cobwebbed coat and hat
Came up through the floor like an ancient rat.
And there they hid;
And Reuben slid
The fastenings back, and the door undid.
"Keep dark!" said he,
"While I squint an' see what the' is to see."

As knights of old put on their mail,—
From head to foot
An iron suit,
Iron jacket and iron boot,
Iron breeches, and on the head
No hat, but an iron pot instead,
And under the chin the bail,—
I believe they called the thing a helm.
And the lid they carried they called a shield;
And, thus accoutred, they took the field,
Sallying forth to overwhelm
The dragons and pagans that plagued the realm:—

So this modern knight
Prepared for flight,
Put on his wings and strapped them tight,
Jointed and jaunty, strong and light;
Buckled them fast to shoulder and hip,—
Ten feet they measured from tip to tip!
Not on his head like those of yore,
But more like the helm of a ship
"Hush!" Reuben said,
"He's up in the shed!"
He's opened the winder,—I see his head!
He stretches it out,
An' pokes it about,
Lookin' to see 'f the coast is clear,
An' nobody near,—
Guess he don't o' who's hid in here!
He's riggin' a spring board over the sill!
Stop laffin', Solomon! Burke, keep still!
He's climbin' out now—Of all the things!
What's he got on? I van, it's wings!
An' t' other thing? I vim, it's a tail!
An' there he sets like a hawk on a rail!
Steppin' careful, he travels the length
Of his spring-board, and tecters to try its strength.
Now he stretches his wings, like a monstrous bat;
Pecks over his shoulder, this way an' that,
Fer to see 'f the 's any one passin' by;
But the 's on' a ca'f an' a goslin' nigh.
They turn up at him a wonderin' eye,
To see—The dragon! he's goin' to fly!
Away he goes! Jimminy! what a jump!
Flop flop—an' plump
To the ground with a thump!
Flutt'rin' an' flound'rin', all 'n a lump!"

As a demon is hurled by an angel's spear,
Heels over head, to his proper sphere,—
Heels over head, and head over heels,
Dizzily down the abyss he wheels,—
So fell Darius. Upon his crown,
In the midst of the barnyard, he came down,
In a wonderful whirl of tangled strings,
Broken braces and broken springs,
Broken tail and broken wings,
Shooting-stars, and various things!
Away with a bellow fled the calf.
And what was that? Did the gosling laugh?
'Tis a merry roar
From the old barn-door,
And he hears the voice of Iotham crying,
"Say, D'rius! how de yeou like flyin'?"

Slowly, ruefully, where he lay,
Darius just turned and looked that way,
As he stanchd his sorrowful nose with his cuff.

"Wal, I like flyin' well enough,"
He said, "but the' ain't sich a thunderin'
sight
O' fun in 't when ye come to light."

MORAL

I just have room for the moral here:
And this is the moral,—stick to your sphere.
Or if you insist, as you have the right,
On spreading your wings for a loftier flight,
The moral is,—Take care how you light.

FOUR DUCKS ON A POND

It may not be "four ducks on a pond," that we remember for years, but very likely we have some little picture of like simple beauty imprinted for ever on our memory. The writer, William Allingham, who died in 1889, possessed to a high degree the art of word painting as these simple lines show

FOUR ducks on a pond,
A grass-bank beyond.
A blue sky of spring,
White clouds on the wing:
What a little thing
To remember for years—
To remember with tears!

GIVE US MEN

The following spirited appeal to the nation to furnish true men to further the interests of the country is supposed to have been written by a Bishop of Exeter

GIVE us men!
Men from every rank,
Fresh and free and frank:
Men of thought and reading,
Men of light and leading,
Men of loyal breeding,
The nation's welfare speeding:
Men of faith and not of fiction,
Men of lofty aim in action,
Give us men—I say again
Give us men!
Give us men!
Strong and stalwart ones:
Men whom highest hope inspires,
Men whom purest honor fires,
Men who trample self beneath them,
Men who make their country wreath them
As her noble sons,
Worthy of their sires:
Men who never shame their mothers,
Men who never fail their brothers,
True however false all others,
Give us men—I say again,
Give us men!

Give us men!
Men who when the tempest gathers
Grasp the standard of their fathers
In the thickest fight:
Men who strike for home and altar
(Let the coward cringe and falter,)
God defend the right!
True as truth though low and lonely,
Tender as the brave are only:
Men who tread where saints have trod,
Men for country, home and God;
Give us men—I say again,
Give us such men!

THE DOUGLAS TRAGEDY

This is an old ballad dating from very early times. It is known in Denmark and in other European countries, and the Scotch have localized it as happening in Black House on Douglas Burn.

Rise up, rise up, now, Lord Douglas,"
she says,

"And put on your armor so bright;
Let it never be said, that a daughter of thine
Was married to a lord under night.

"Rise up, rise up, my seven bold sons,
And put on your armor so bright,
And take better care of your youngest sister,
For your eldest's awa the last night."

He's mounted her on a milk-white steed,
And himself on a dapple gray,
With a hugelet horn hung down by his side,
And lightly they rode away.

Lord William lookit o'er his left shoulder,
To see what he could see,
And there he spy'd her seven brethren bold,
Come riding over the lea.

"Light down, light down, Lady Marg'ret,"
he said,

"And hold my steed in your hand,
Until that against your seven brothers bold,
And your father, I mak' a stand."

She held his steed in her milk-white hand,
And never shed one tear,
Until that she saw her seven brethren fa',
And her father hard fighting, who loved
her so dear.

"O hold your hand, Lord William!" she
said,

"For your strokes they are wond'rous sair,
True lovers I can get many a one,
But a father I can never get man."

O she ta'en out her handkerchief,
It was o' the holland sae fine,
And aye she dight her father's bloody
wounds,
That were redder than the wine.

"O chuse, O chuse, Lady Marg'ret," he said,
"O whether will ye gang or bide?"

"I'll gang, I'll gang, Lord William," she said,
"For ye have left me no other guide."

He's lifted her on a milk-white steed,
And himself on a dapple gray,
With a hugelet horn hung down by his side,
And slowly they baith rode away.

O they rode on, and on they rode,
And a' by the light of the moon,
Until they came to yonn wan water,
And there they lighted down.

They lighted down to tak a drink
Of the spring that ran sae clear;
And down the stream ran his gude heart's
blood,
And sair she gan to fear.

"Hold up, hold up, Lord William," she says,
"For I fear that you are slain!"

"'Tis naething but the shadow of my scarlet
cloak,
That shines in the water sae plain."

O they rode on, and on they rode,
And a' by the light of the moon,
Until they cam' to his mother's ha' door,
And there they lighted down.

"Get up, get up, lady mother," he says,
"Get up, and let me in!"
Get up, get up, lady mother," he says,
"For this night my fair ladye I've win."

"O mak my bed, lady mother," he says,
"O mak it braid and deep!"
And lay Lady Marg'ret close at my back,
And the sounder I will sleep."

Lord William was dead lang ere midnight,
Lady Marg'ret lang ere day—
And all true lovers that go thegither,
May they have mair luck than they!

Lord William was buried in St Mary's kirk,
Lady Margaret in Mary's quire;
Out o' the lady's grave grew a bonny red
rose,
And out o' the knight's a brier.

And they twa met, and they twa plat',
And fain they wad be near;
And a' the world might ken right weel,
They were twa lovers dear.

And bye and rode the Black Douglas,
And wow but he was rough!
For he pull'd up the bonny brier,
And flang'd in St Mary's loch.

LA BELLE DAME SANS MERCI

Some of us perhaps have seen Rossetti's picture of Keats' "Belle Dame" accompanied by the young knight whom, by her fatal charms, she has lured from honor and duty, and left to a tragic and late

AH, what can ail thee, wretched wight,
Alone and palely loitering
The sedge is wither'd from the lake,
And no birds sing.

Ah, what can ail thee, wretched wight,
So haggard and so woe-begone?
The squirrel's granary is full,
And the harvest's done.

I see a lily on thy brow,
With anguish moist and fever dew;
And on thy cheek a fading rose
Fast withereth too.

I met a lady in the meads,
Full beautiful, a faery's child;
Her hair was long, her foot was light,
And her eyes were wild.

I set her on my pacing steed,
And nothing else saw all day long;
For sideways would she lean and sing
A faery's song.

I made a garland for her head,
And bracelets too, and fragrant zone;
She look'd at me as she did love,
And made sweet moan.

She found me roots of relish sweet,
And honey wild, and manna dew,
And sure in language strange she said,
I love thee true.

She took me to her elfin grot,
And there she gaz'd and sighed deep;
And there I shut her wild sad eyes—
So kissed to sleep.

And there we slumber'd on the moss,
And there I dream'd, ah woe betide,
And latest dream I ever dream'd,
On the cold hill side.

I saw pale kings, and princes too,
Pale warriors, death-pale were they all;
Who cry'd—"La Belle Dame sans merci
Hath thee in thrall!"

I saw their starv'd lips in the gloom,
With horrid warning gap'd wide,
And I awoke, and found me here
On the cold hill side.

And this is why I sojourn here
Alone and palely loitering,
Though the sedge is wither'd from the lake
And no birds sing.

ODE TO THE WEST WIND

This is a very fine example of a lyric—that is, a poem which expresses the poet's own thoughts and feelings with spontaneity and unreserve. Shelley particularly excelled in this kind of work. His sensitive spirit was depressed by some cause or other, and he appeals to the west wind, who will upheave a dead leaf, a swift cloud or a wave, to lift him, too, above the thorns of life and scatter his thoughts abroad like the sound of a great trumpet blowing.

O WILD West Wind, thou breath of
Autumn's being,
Thou, from whose unseen presence the leaves
dead
Are driven, like ghosts from an enchanter
fleeing,

Yellow, and black, and pale, and hectic red,
Pestilence-stricken multitudes: O thou,
Who chariotest to their dark wintry bed

The winged seeds, where they lie cold and
low,

Each like a corpse within its grave, until
Thine azure sister of the Spring shall blow

Her clarion o'er the dreaming earth, and fill
(Driving sweet buds like flocks to feed in air)
With living hues and odors plain and hill

Wild Spirit, which art moving everywhere;
Destroyer and preserver; hear, oh, hear!

Thou on whose stream, 'mid the steep sky's
commotion,

Loose clouds like earth's decaying leaves are
shed,

Shook from the tangled boughs of Heaven
and Ocean.

Angels of rain and lightning: there are
spread

On the blue surface of thine airy surge,
Like the bright hair uplifted from the head

Of some fierce Maenad, even from the dim
verge

Of the horizon to the zenith's height,
The locks of the approaching storm. Thou
dirge

Of the dying year, to which this closing night
Will be the dome of a vast sepulchre,
Vaulted with all thy congregated might

Of vapors, from whose solid atmosphere
Black rain, and fire, and hail will burst. oh,
hear!

Thou who didst waken from his summer
dreams
The blue Mediterranean, where he lay,
Lulled by the coil of his crystalline streams,

Beside a pumice isle in Baiae's bay,
And saw in sleep old palaces and towers
Quivering within the wave's intenser day,

All overgrown with azure moss, and flowers
So sweet the sense faints picturing them!
Thou

For whose path the Atlantic's level powers

Cleave themselves into chasms, while far
below

The sea-blooms and the oozy woods which
were

The sapless foliage of the ocean know

Thy voice, and suddenly grow gray with fear,
And tremble and despoil themselves; oh,
hear!

If I were a dead leaf thou mightest hear;
If I were a swift cloud to fly with thee;
A wave to pant beneath thy power, and
share

The impulse of thy strength, only less free
Than thou, O uncontrollable! If even
I were as in my boyhood, and could be

The comrade of thy wanderings over heaven,
As then, when to outstrip thy skyeey speed
Scarce seem'd a vision; I would ne'er have
striven

As thus with thee in prayer in my sore need.
Oh, lift me as a wave, a leaf, a cloud!
I fall upon the thorns of life! I bleed!

A heavy weight of hours has chained and
bowed

One too like thee: tameless, and swift, and
proud

Make me thy lyre, even as the forest is:
What if my leaves are falling like its own!
The tumult of thy mighty harmonies

Will take from both a deep, autumnal tone,
Sweet though in sadness. Be thou, Spirit
fierce,

My spirit! Be thou me, impetuous one!

Drive my dead thoughts over the universe
Like withered leaves to quicken a new birth!
And, by the incantation of this verse,

Scatter, as from an unextinguished hearth
Ashes and sparks, my words among man-
kind!

Be through my lips to unawakened earth

The trumpet of a prophecy! O wind,
If Winter comes, can Spring be far behind?

AMERICA'S MOST VALUABLE PLANT



The maize, or Indian corn, or simply corn, is the most valuable crop raised in America. The earliest settlers found the Indians growing small fields of this crop, which they prepared in several different ways. White men soon learned to raise it, and now the United States produces about 3,000,000,000 bushels a year, or three to four times as much as the wheat crop. It makes good food for mankind and for animals, and its stalks are often eaten by animals. The stalks have been cut off close to the ground, and put into shocks. Later they will be taken to the barns. The ears are sometimes taken off before the stalks are cut. When the English use the word corn, they mean wheat, as they do not use much maize.

WHAT THIS STORY TELLS US

SO much is said of the great wheat belt of the prairies, of the Western provinces, and of the fertile farm lands of the other provinces, that we usually look upon Canada as being chiefly an agricultural country, and give small attention to her mineral resources. It is true that up until recently not much effort was made to develop her mines. Her wealth has lain chiefly in her farm lands and forests and indeed her fertile lands lay upon her the responsibility of continuing to be one of the great granaries of the world. Nevertheless, her mountains contain great stores of minerals, and the time is not far distant when a large industrial population will grow up within her borders, whose occupation will be provided for them by the products of her mines. This story gives us a short account of the mineral resources of the Dominion, and from it we can learn to judge for ourselves where manufacturing cities are likely to grow up.

THE MINERAL RESOURCES OF CANADA

IN other places in the Book of Canada, you may read of her scenery, her great fisheries, the broad acres of her farm lands, the romance of the wheat fields of her prairies, and her miles of forest lands. Now we are going to think for a few minutes of the treasures of metals, and other minerals, that are hidden in her mountains, and rocks, or stored deep down under the surface of the earth.

Canada has been very slow in developing her mineral resources. Fur trapping and woodcraft appealed more than prospecting for minerals to the adventurous spirits among the Frenchmen who made the first settlements in the country. The English-speaking settlers, from the Loyalists onward, who came after them, were all home seekers, and it was not until quite recently that any effort was made to dig wealth out of the earth. Indeed, although the Dominion owns nearly half the continent of North America, until very lately it was doubted whether Canada would ever become an important mining country. On account of the activity of the last few years, however, Canadians now hope that their country will become as rich in mines and metal industries

CONTINUED FROM 5948



as the great republic to the south.

Almost all the provinces possess mineral resources of importance, but only four—Nova Scotia, British Columbia, Alberta and Ontario—have up to this time been large producers of the products of mines.

IRON, THE MOST VALUABLE OF
ALL THE METALS

Probably if a class of fifty school children were asked, "What are the most valuable metals known?" forty-five of them would answer in chorus, "gold and silver." Are they? Of what use would a gold plough or a silver harrow be? How long do you think a silver steam engine would last, or a steamboat made of gold? The Aztecs of Mexico and the Incas of Peru had great stores of gold and silver; but they went down before a mere handful of Spanish soldiers, who were armed with steel weapons. Gold and silver are valuable for many things besides money and jewelry, but iron is much more valuable to the welfare of the world than either, and the country that has stores of iron is fortunate.

Prince Edward Island is the only one of the Canadian provinces which has no iron. Moreover, coal to pro-

vide heat to smelt the iron is found in vast quantities. Tungsten, which is used to harden steel for tools, is found, though not in large quantities, and the mineral called by the curious name of molybdenum, which is useful for the same purpose, is found in many places. This mineral has not been mined, but when they need it, men know that it is there.

It is true, also, that there are no iron mines in operation outside of Nova Scotia, Quebec and Ontario. The world has not needed the iron, and there has been no call for it, but when the land fills up with people, the iron is there in reserve for their use. The only important iron mines which are being worked are in Nova Scotia, where the iron lies close beside the coal beds, and coal can be delivered to the coke-making plants for little more than the cost of mining it.

Huge quarries of limestone in Nova Scotia produce the tons and tons of this stone that are used in the smelting mills. Of course this stone is found in very many other places in the Dominion. For instance, as we have read in another place, the Rocky Mountains are partly made of it. Limestone, as we know, is used in other ways, such as for building material and to make mortar, but it is interesting to speak of it here, because we do not often think of it in association with iron.

CANADA'S GREAT WEALTH IN COAL

We do not include coal among the metals; but as we have already spoken of it in connection with iron, we shall tell about it here. Ontario has only a very small deposit of coal, and Quebec has none. The deposits in Manitoba and New Brunswick are not very important, but there are vast supplies in other places. We may read elsewhere of the important mines in Nova Scotia and British Columbia, where the chief coal mining industries are carried on. Saskatchewan has large deposits; it is believed that Alberta possesses over a trillion tons, which have scarcely been touched, while in the Yukon and the Northwest Territories it is estimated that there are billions of tons.

THE NICKEL MINES AND COPPER MINES OF THE DOMINION

We talk so much nowadays of nickel steel, the hard alloy of steel and nickel which is used for armor plate, bridge

building and other purposes, that it is natural to think of iron and nickel at the same time. Large quantities of nickel are used in making this steel every year, and the metal is used in many other ways. Iron and steel are nickel-plated to prevent rust; nickel is used in making the alloy called German silver; it is used in making United States five cent coins and so on. It is interesting, therefore, to learn that three-quarters of all the nickel used in the world comes from the Sudbury district in Western Ontario, and that in spite of the large output of the mines, they show no sign of exhaustion. Nickel is also found in the northern part of Ontario, in what is known as the Cobalt district, but of this famous mining district, we shall speak presently.

The Sudbury district also produces large quantities of copper, for which you can think of so many uses, that we need suggest none. British Columbia, however, goes far beyond Ontario in the value of her copper mines. Copper is found in Quebec and Nova Scotia, and large deposits have lately been found by explorers on the frozen Arctic shores and in some of the Arctic islands.

GOLD AND SILVER ARE FOUND IN LARGE QUANTITIES

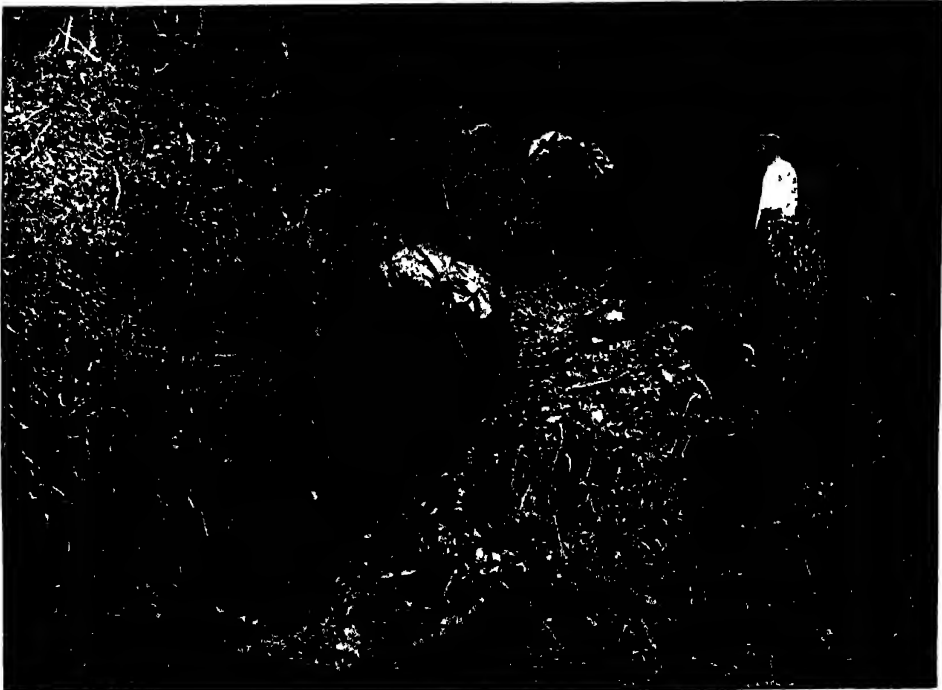
Many stories have been told of the rush to British Columbia when gold was first found, and later to the Yukon district. Hundreds of men lost their lives, many more lost their all; a few made huge fortunes from their claims. Nowadays the gold mining industry stands on a more business-like basis than in the early picturesque days. Large mining companies are formed, much machinery is used, and a great deal of gold is produced from gold-bearing quartz rocks, which the early miners could not reach, and great quantities of gold are every year shipped out of the country.

British Columbia has long been known as a gold mining country. It is the northwest continuation of the great gold and silver bearing belt of the Western states, from which so many hundreds of millions of dollars' worth of the precious metals have been obtained. Gold is found in paying quantities in almost every section of the province, and there is scarcely a creek where "color" cannot be found. The yearly output reaches millions of dollars.

PROSPECTORS FOR GOLD IN CANADA



The search for gold will lead men to go almost anywhere and risk almost any hardship. Here are a lot of prospectors, gathered around what we are told was the leading restaurant in the vicinity. This picture was taken near a gold-strike which had just been made. These men come from every class of society.



This track is wide enough for a horse, but not for a vehicle. All goods must be packed on horseback or carried by men themselves if they cannot afford to buy horses. It is a difficult and expensive means of carrying freight, as the weight a horse can carry over the steep hills is limited.
Pictures from Brown Bros.

The history of gold mining in Ontario is not so picturesque as the story of the early gold days in British Columbia and the Yukon. Nevertheless Ontario has very valuable deposits of gold, and actually produces more of the precious metal than British Columbia. Nova Scotia also produces gold, and so do Manitoba and Saskatchewan, though in much smaller quantities.

If the gold mining story of Ontario is not picturesque, this cannot be said of the history of silver mining. In 1903 Ontario scarcely knew that she possessed silver; but in that year a wonderful deposit of silver ore, mixed with nickel, bismuth, cobalt, copper, lead and zinc, was discovered. Instantly there was a rush for the district; mining companies were formed, people mortgaged their property to buy shares, and there was much excitement. Generally the mines have been well managed, and the original shareholders have made a good deal of money, for the mines proved to be very rich. These Cobalt mines, and the mines at Kootenay in British Columbia, which have been famous for a number of years, have put Canada third among the silver producing countries of the world.

Platinum, which is counted among the precious metals, is found in Canada, in paying quantities, but the deposits are not large.

LEAD, ZINC AND THE MINOR METALS

Lead is nearly always found with silver, and the Canadian silver mines are no exception to the rule. Lead is mined as an ore of silver, in which it may be looked upon as a by-product. The output is large, and will continue to increase with that of silver. The same thing may be said of zinc, which is found and mined in British Columbia and Ontario.

The world's supply of cobalt, from which we get the wonderful cobalt blue, comes from the silver mines at Cobalt, and these mines also produce arsenic. Corundum, a hard mineral used in making grinding stones, is found in Ontario. Manganese and antimony exist in the Maritime Provinces, and some cinnabar, or sulphide of mercury, is mined in British Columbia.

PETROLEUM, OR ROCK OIL, AND NATURAL GAS

Petroleum you may think does not come under the head of mineral re-

sources; but you know the word means "rock oil," and this thick, oily substance was made by the same forces of nature that produced coal. It is found in many parts of Ontario, and especially in the peninsula which stretches out between Lake Erie and Lake Huron. Petroleum has also been found in Gaspé, Quebec, in New Brunswick, and in British Columbia, and it is believed that a large area of oil bearing strata underlies Northern Alberta.

Wherever we find oil, we are not surprised to find natural gas; and this is true of Canada as of other places. Gas has been found along Lake Erie, in Ontario, in New Brunswick, in Alberta and in British Columbia, and is important for fuel, lighting and manufacturing.

MATERIALS USED IN BUILDING

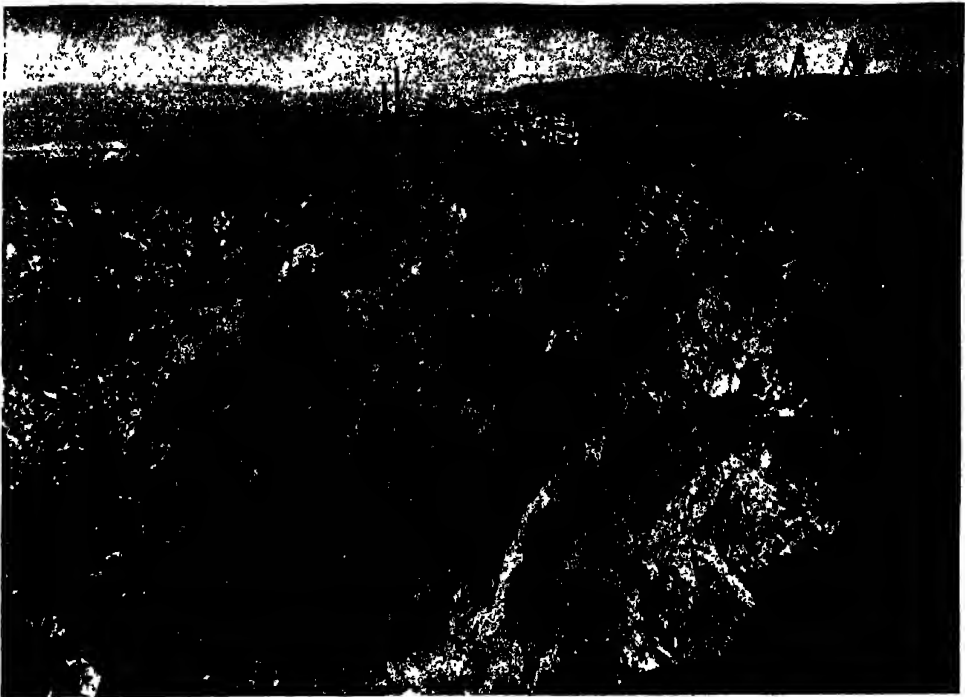
In another place, we have told you about the white gypsum cliffs of Nova Scotia, and there you may also read of the gypsum quarries in New Brunswick. Gypsum is also found in Ontario, but none of the other deposits come up to these of Nova Scotia in richness. Very important deposits of asbestos are found throughout Ontario and Quebec, and give the world the largest part of its supply of asbestos, or mineral wool, as it is sometimes called from its woolly, fibre-like appearance. As you know, asbestos is almost absolutely fireproof, and its use for packing, for theatre curtains, and the like has prevented many fires.

We might go on and tell you about the Dominion's supply of graphite and salt; of its granite quarries and slate quarries; of the clay from which bricks, tiles and cement are made; but if we did you might think of this story as being only an uninteresting geological catalogue.

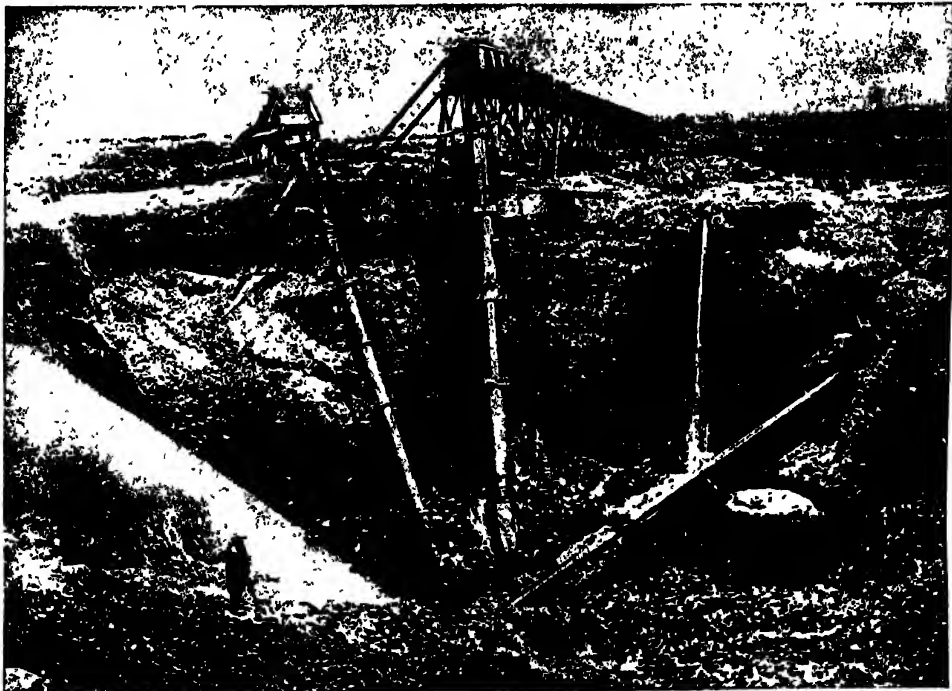
We have said enough to show you the great mineral treasures our country has so that you may see that she comes behind no other nation in the wealth of all her natural resources, and perhaps enough to rouse your curiosity and make you want to learn more about it. The study of geology will show you why we expect to find copper and gold together; or silver and lead; how a geologist knows where a miner is likely to find coal in the Rockies, or petroleum in the Alberta coal fields, and many other fascinating things which we cannot touch on here.

THE NEXT STORY OF CANADA IS ON PAGE 6119.

MINING FOR ASBESTOS AND FOR GOLD



This is a picture of an asbestos quarry at Thetford, in Quebec. Asbestos is a curious mineral in which the rock crystals form fibres. The long fibres are spun and woven into fireproof cloth, which is used for theatre curtains, steam pipe coverings, and such purposes. The short fibres are made into felt and thick board. Paint is also made from the mineral. Most asbestos used in the world comes from Canada.



Hydraulic mining, that is, mining by water pressure, is now followed in many places where gold is found free in gravel beds. Strong streams of water, which are directed against the banks, break them down and carry the gravel into sluices. The heavy gold sinks, while the lighter stones and earth are washed away. Photographs from Brown Bros., New York.

LOOKING INTO THE VAST OCEAN OF SAND



This picture of an Arab traveler gazing into the distance gives us some conception of the awful loneliness and desolation of the Desert, with its vast ocean of sand stretching far out beyond the horizon.



THE PEOPLES OF THE DESERT THE WILD, FREE RACES OF THE EARTH AT HOME

A BURNING expanse of red, grey, brown, or white sand, thinly dotted with oases of wells and grass, and diversified with stony and rocky tracts—that is the scene which springs up in imagination at the very mention of deserts. The mind at once flies to Arabia, the typical land of wilderness desolation, or to the vast African Sahara, for these two marvelous regions have always been, above all others, representative of the desert.

But the world's great deserts are vaster and more varied than most of us realize. There are many great uninhabited wastes in the world, caused chiefly by the lack of rain. This accounts for the existence of the great Sahara, in North Africa, which starts at Cape Nun and stretches to the banks of the Nile, and then on the east of that river forms the Libyan Desert.

The most extensive of all the Asiatic wildernesses is the Mongolian Desert of Gobi. Arizona, one of the largest states of our own country, contains one of the biggest deserts of the New World. Other regions are arid and barren, bearing nothing but sage-bush and cactus. One of the

CONTINUED FROM 6049



most dreaded of the deserts is that in the interior of Australia.

The Arabian and African wilderness regions must ever exercise the most fascinating influence on the minds of civilized peoples. Consider the ways, for example, of the various tribes of the Arab race. The Arabs are mainly divided into two sections—those who inhabit towns, some on the borders of the desert, others within the wastes; and those who restlessly wander here and there. Now, the nomad Bedouin is very interesting. He has a hard life, but it is a very healthful one, and in some respects it is a happy existence, with its absolute freedom from town restraints, and its enjoyment of the pure sweet desert air.

Two of the largest and wealthiest of the Arab tribes are the famous Anaeze and the Shommar. Both are dreaded by travelers, and among them are many persistent robbers. These tribes and several others are constantly warring, one against the other, and the settled existence to which we are accustomed in civilized countries is unknown to them. All except one particular tribe possess

splendid horses. Carrying very long spears, often measuring twelve feet, pointed with steel lances, the Bedouin horse-men riding on these lovely steeds present a fine spectacle, especially when they indulge in the picturesque games in which they delight. They are fond of galloping and racing, and they like also the exercises in which they play at war.

Arab steeds are so well trained as rarely to need an iron bit. The ordinary Arab bridle is almost the same as our halter-strap. The desert horse seems to understand its master, and almost to interpret his will by a movement or touch. Most of the horses belong to the sheikhs, or head men of the tribes, and, except when they are needed, are kept at some distance from the camp.

THE WEALTH OF THE WANDERING ARABS

The Arab term Bedouin means desert-dweller, and the traveler must wonder how these Bedouin tribes can exist at all in a vast sandy or rocky waste. Of course, there are great sandy areas, but a large part of the Arabian wilderness is a desert simply in the sense that it has no settled population.

If all were absolutely barren, these nomad Arabs could not live and prosper, and grow wealthy as some of the sheikhs do. The fact is that very large tracts of the soil are excellent. In springtime, after a heavy rainfall, Northern Arabia becomes like an American prairie over large areas. Lovely wild flowers spring up that would delight the heart of a botanist. This explains why the wandering Bedouin are rich in the possession of thousands of cattle, of camels, of horses, of sheep, of goats.

Dr. Zwemer, who lived at Bahrein, in the Pearl Islands, and who has traveled much as a devoted missionary among the desert tribes, says: "I am sure you can still find some of these Bedouin chiefs who, like Job, have seven thousand sheep, and three thousand camels, and a great household."

Just as in the time of Job, thousands of years ago, so do these children of the desert to-day dwell in black tents, made of goat's hair, which forms a perfect waterproof covering. These tents are square or oblong in shape.

THE STRANGE SPECTACLE OF A DESERT CAMP

An Arab desert camp is a singular

spectacle, but it is well worth visiting. For the journey into the desert from some outlying spot presents and a guide must be taken. The guide walks barefooted, for he prefers to carry his sandals tucked in his girdle.

Presently we come to flocks of sheep with their shepherds, who direct the guide to the camp, which never remains more than a month in one spot. It is sure to be pitched in some hollow, the deepest that can be found, for two reasons--the necessity of concealment from hostile bands of fellow-Arabs; and the advantage of shelter from the hot winds that blow over the desert plains.

THE DELIGHTFUL COURTESY OF THE ARAB TRIBES

The great encampment is carefully arranged. Some tribes spread their tents in a great square in rows; others prefer a picturesque oval. One feature never is lacking--the symbol of the authority of the sheikh. This little king always plants his spear in front of his tent. Just behind it is the section curtained off for the reception of guests. And how effusive, and even pathetic, is the hospitality of these Arabs, robbers and assassins though some of them are! Their kind courtesy to friendly visitors never fails, even though in the desert they would rob the very same folks without the slightest compunction, and perhaps slay them if resistance were offered. But never is a Bedouin of the wilderness known to violate the beautiful law of hospitality. Out of the burning sunshine the weary traveler is welcomed. The women hasten to bring him water to cool his head. A great bowl of camel's milk is offered before any questions are asked. At night a fat kid or lamb will be killed, and a feast provided.

THE MAGIC JUG IN THE DESERT

There are real luxuries in the Arab tents. The tents are spacious, for they will accommodate considerable quantities of several sorts of grain, chaff, fruits, dried fish, and wood. There is also ample room for refuge for fowls, goats, some cows, and a horse or two. The great main room has in the centre a large hollow which serves as the fireplace. The smoke must find its way out as best it can, so in time the tent becomes blacker and blacker; indeed, the old

THE HOMES OF THE PEOPLE OF THE DESERT



A Bisharin tent in the Sahara Desert.



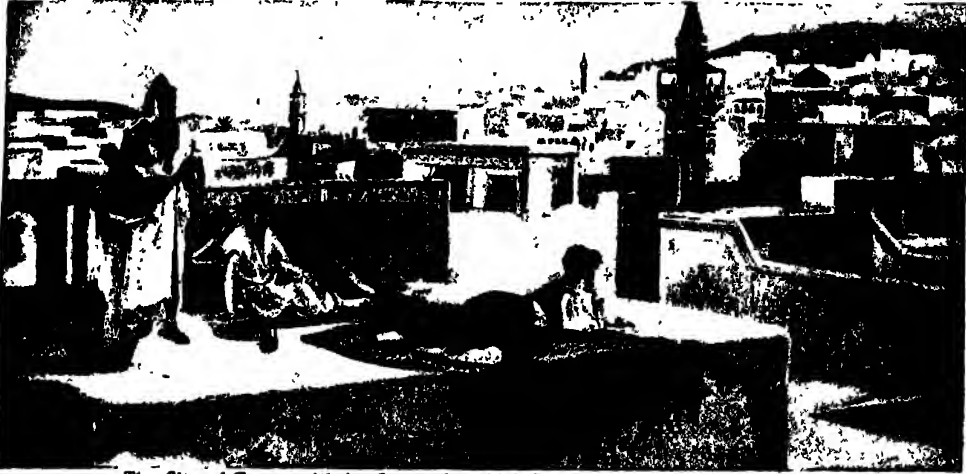
An Indian hut in the Arizona Desert.

Copyright by Underwood & Underwood.



A group of Bisharin tribesmen in the great Sahara Desert.

THE CITIES AND TOWNS OF THE DESERT



The City of Tunis, with its flat roofs, which largely take the place of gardens.



A miserable village in the Mongolian Desert of Gobi, with a fine Buddhist temple close by.



The picturesque market place at Assiout, on the Nile, with the mosque in the centre.

SCENES & PERILS OF THE DESERT TRAVELER



The mirage—an imaginary oasis suddenly appearing to a group of travelers.



A caravan crossing the Sahara, with "tents" on the camels for the women travelers.



A sandstorm in the great Australian desert. Camels have been introduced into Australia, for use in the desert.

Bible phrase which speaks of the black tents of Kedar is as applicable now as then.

One great blessing is the famous porous jug. The Arabs who live and work in towns make unglazed water-jugs and jars. These are an unspeakable benediction to the people, for they have no ice. The wells are never very deep, and the water comes from a long distance. Thus, were it not for the water-jugs of this kind, cold water would be unknown. How, then, is it cooled? Very simply. If poured into one of these porous earthen pots and hung for a few minutes in the wind, the effect is astonishing, for the beverage becomes deliciously cold and refreshing.

WHAT THE PEOPLE EAT AND DRINK

Palatable and wholesome is the desert fare. There are luxuries also in the food, though we should hardly relish the favorite dishes of the tribes, such as leben, the peculiar sour milk of mares and camels, which in Turkey is called yoghurt; pilaf, which is rice beautifully cooked and containing little shreds of lamb, or kid, or chicken. But when the Arabs make a great feast in the desert, they roast a sheep or goat whole on red-hot stones. Hard biscuits in the shape of rings, called kak, are much relished, and so is the peculiar butter called ghee. When the Arabs have to carry water about, they do so in great leathern bottles made of the whole skins of sheep and goats.

One beverage that is enjoyed in the desert cannot be excelled anywhere in the world. Coffee was first brought to Arabia from Abyssinia about the year 1400 by a pilgrim, whose tomb in Yemen is an object of veneration; and the seeds planted in Yemen produce the Mocha coffee which is so famous.

DATES AND SUGAR-CANE

The chief of all foods among the desert peoples is the date, and the most precious thing that grows in the countries inhabited by these tribes is the date-palm, one of the noblest and most graceful of all trees. The Arabs of the desert eat much wild honey, and will feed abundantly on locusts when they can; they also feast eagerly on the big lizards that dart about among stony places, and do not disdain even the jerboa. But

the great article of diet is the date, without which the Arab of the wilds could hardly subsist. A joyous time is the festival known in the springtime as the Marriage of the Date Palms, when the soft spring breezes waft the pollen from the male to the female blossoms.

Arab children are never happier than when they are sucking sugar-cane, which is cut into pieces and sold by the knot—that is to say, by the length of the stick from one knot to the next. But nothing is so abundant as dates. Sometimes for many weeks nothing else will be eaten in an Arab tent, and even the donkeys and camels are fed on this fruit. Outside many a tent at this moment will be Arab boys and girls playing games with date-stones on the smooth sands. None of the date-stones are thrown away, for they are ground up into a coarse kind of meal for cattle food. Indeed, nothing is wasted that belongs to the date-palm. The fragrant blossoms make a favorite beverage, and if the fruit that has not been consumed turns stale and somewhat musty, it is converted into vinegar. The leaves are woven into string, fans, mats, and baskets, and the long, thin, strong branches are made up by the carpenters in the towns into chairs, cradles, cages, beds, boats, and countless other things.

THE BREAKING UP OF A CAMP

One event in the desert is always exciting. This is the breaking up of a camp for a migration. When a tribe shifts its quarters, all possible preparations are made on the previous day, and, early in the morning, everything is in motion for the great departure.

Tents are taken down and packed, and soon the country is full of camels and flocks and herds and Arabs. Sometimes ten or a dozen camels will be arranged in procession at considerable intervals from each other. To the back of each camel are fastened four upright poles, which support a canopy called a *merkub*. On this erection rides an Arab girl, prostrate on her breast. These girls are always the sisters of heroes—men who have won fame in battle.

THE SOLEMN MAJESTY OF A SEA OF SAND

The Bedouin Arabs are ignorant in one sense, for they have no schools and few can read and write. They are

AN ARAB SCHOOL AND AN ARAB WORKSHOP



A Mohammedan school in Egypt, where the boys wear their hats and take off their shoes.



This is a photograph of some Arabs at work. Using both their fingers and their toes, they carve wood with amazing rapidity into beautiful shapes, making screens, boxes, and cabinets, which go all over the world.

A HOUSE ON A CAMEL'S BACK



How a family crosses the Sahara Desert, living and sleeping in a tent.

Copyright by Underwood & Underwood



A pathetic scene in the desert: a camel sinking in the sand of the terrible Desert of Gobi.

-THE PEOPLES OF THE DESERT-

temperate, for as Moslems they never taste intoxicants. There are no mosques in the deserts, of course, but these children of the wilderness are much given to prayer. The first chapter of the Koran is recited in every tent five times a day, while the worshippers prostrate themselves toward Mecca.

THE VISION OF THE DESERT SKY

Caravans—what scenes this word conjures up! The longest and most perilous caravan expeditions are those which cross the great Sahara, and this vast African desert has its charms, its unspeakable fascinations, its indescribable phenomena. One of these is the mirage, the reflection in the sky which has puzzled so many travelers in ages past.

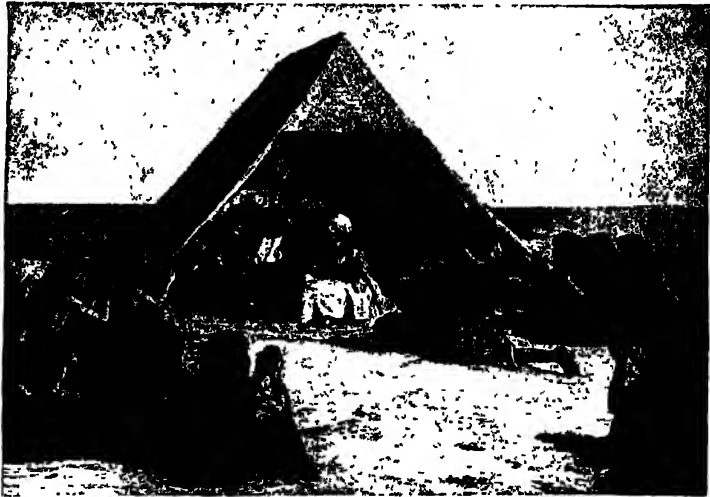
A traveler riding in the Syrian desert from Bagdad to Babylon was perplexed by seeing what looked like the great ruin Akarkuf, though he knew that it was more than thirty miles distant across the desert. Really what he saw was an old well, only a few hundred yards from where he stood wondering. Distressing have been the experiences of the members of great camel caravans crossing the Sahara, parched with thirst, under burning skies, suddenly plunged into ecstasy by the full view of palm-trees forming a lovely oasis at a little distance—for palm-trees always mean a delicious well close by. The travelers have in some sad instances rushed on to find that they had been mocked by a mirage, and men and beasts have perished.

The towns that border the deserts often lie in the centre of surrounding barren solitudes, as does Damascus, the oldest city on earth, where are lovely gardens, watered by fountains from Abana and Pharpar, the twin rivers that rush down from the snows of Lebanon.

Spots of enchantment in the Libyan Desert of Africa are the lovely oases, great patches of vegetation caused by the presence of water-springs. Four

very large and beautiful oases are inhabited by the great and famous tribe of Mugrebi Arabs, who love their gardens and villages embowered in date-palm groves, with sparkling fountains ever refreshing them. One of the most dreaded perils of the desert is that hot wind called by the Arabs the simoon. When this fierce and burning blast sweeps across the vast wastes it is deadly in its effect. Everyone in a caravan must, in order to escape alive, kneel in the sand with the mouth close to the ground, and, if possible, in the shelter of a camel, a roll of bedding or even a saddle.

The town-dwellers are gifted and clever. They excel in some crafts, especially in various sorts of woodwork.



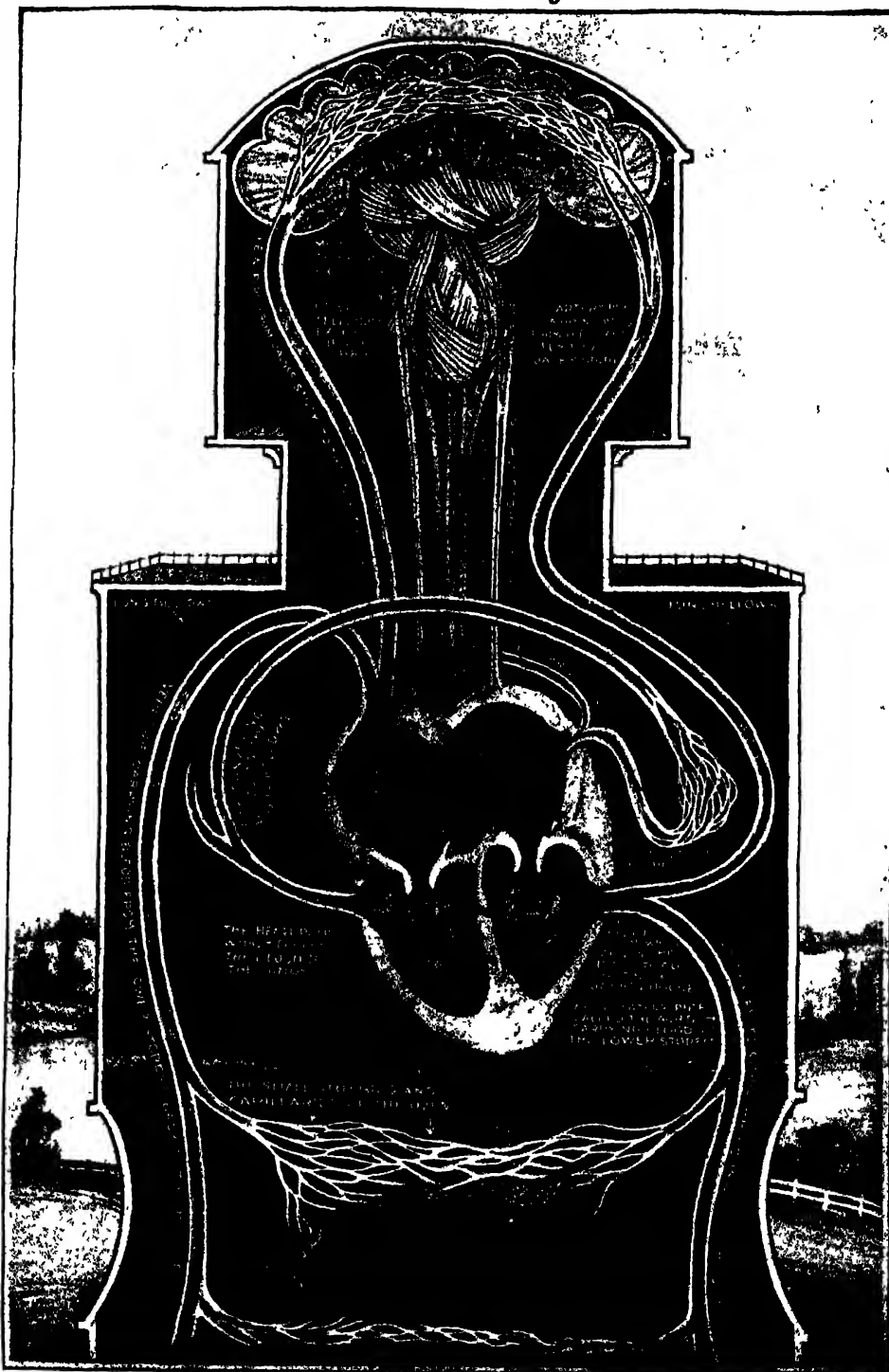
AN ARAB COURT OF JUSTICE IN THE DESERT

That delicate and ornate latticework which is seen in windows, doors, boxes, and cabinets is highly prized. Glass for windows is rarely used in Arabia excepting by Europeans, or by a few Arab families who have learned some of the Western ways. But in Arab houses are to be seen some of the loveliest windows that can be imagined.

The Arabs call a window *shibaak*, which means a network. The joiner fashions a most delicate fabric out of date-palm wood or bamboo, making little round bars, and fitting these to each other in a great variety of decorative designs. Through this fine latticework light and air come into the room, but none can look through upon the inmates from the outside world.

CONTINUED ON PAGE 6178

THE GREAT PUMP OF JACK'S HOUSE



This shows the pump, called the heart, in the middle of Jack's house, and we can see how veins and corridors are linked with the top story. The heart pumps blood through Jack's body; if we start at the x in the heart, and follow the arrows, we can trace the course of a drop of blood through the body back to the heart. Capillaries of only one lung are shown. Really the capillaries spread through every part of the body.

The Book of OUR OWN LIFE



These are some of the pipes, called capillaries, found in Jack's house. Through these pipes, which are so small that 2,000 could lie side by side in an inch, the blood runs to every part of the body, carrying the red cells, which bring air, and the white cells, the chemists that keep microbes out.

JACK'S WONDERFUL PUMP

AND THE LIFE-STREAM THAT FLOWS THROUGH HIS HOUSE

WE have seen that the middle story of Jack's house is the pumping and ventilating story, and we know that Jack's central pump, which is to be found right in the middle of this story, is usually called his heart, and that its business is to drive the blood all through Jack's body. We must study Jack's pump, the pipes through which it drives the blood, and the blood it pumps—blood which first of all is the water-supply of Jack's house, but is also many other things of the greatest importance.

The first fact about the great pump is that it is alive. From this point of view, we might almost compare it to a horse, especially as it has a pair of reins. These reins are most important, and if they are cut by an accident, or if some poison rots them, Jack will certainly die.

The reins of Jack's heart, or pump, are called the vagus nerves, and one of them runs down each side of his neck from his brain to his heart, close beside the great pipe which we can feel beating on each side of the neck. These reins are held, so to say, by servants of Jack, who live in the lowest part of his brain, which is called the

(CONTINUED FROM 606)



bulb, the lowest of the three telephone exchanges of Jack's house. So long as Jack is alive and well, these reins are never let go, but if we wish to find out what they are doing, it is necessary to watch

the consequences of cutting them or poisoning them. If such an accident should happen to Jack we would find that the great pump, which was beating at the rate of, say, eighty times a minute, would at once begin to beat faster and faster, but that every beat would be weaker than the last until it came to a stop, having worn itself out. The commonest and best known of the poisons which act on the heart, so that it races itself to death, is called belladonna, and it is the poison found in the beautiful berries of the deadly nightshade.

But many other things besides the deadly nightshade will affect the beating of Jack's pump, either by making a pull on the reins, or by letting them fall loosely, as it were. Great pain or fear or a sudden shock of any kind will sometimes cause such a tug at the reins that Jack's heart stops on the spot, and he must die in a few seconds, unless the tug at the reins

relaxes. It usually does so very soon, and all we say in such cases is that Jack has fainted. He faints, or perhaps it is better to say he loses consciousness, because the pump ceases to send blood up to his study in his brain, and he cannot work.

On the other hand, fear and many other things may often relax the reins, so that the pump beats much more quickly and, at first, more violently. As soon as the disturbing cause is past, the reins are tightened up again, and the heart begins to beat in an orderly and quiet way as before. In other cases, we find that poisons—such as the poisons in tobacco—neither tighten the reins nor relax them, but keep on jogging at them, so that Jack's heart loses the beautiful, even smoothness it is meant to have, and commences to beat irregularly. Then the doctor says that Jack has a "tobacco heart," and shakes his head. The irregular beat tells just as quickly of damage to Jack's pump as an irregular throb tells of trouble in the engines of a great ship.

THE REINS OF THE HEART WHICH ARE WORKING FOR EVER NIGHT AND DAY

The value of these nerves, or reins, of the heart is that they are connected with every part of Jack's house, and by their action can make his pump beat slower or faster, according to the special needs of the time. Also their existence and action mean that Jack always has something in reserve for special demands. If he is chased by a bull, his nerves will relax their control for a little, and will let his heart go to serve his legs when they are much needed. But from the beginning to the end of the history of Jack's house these reins are always acting to some extent, day and night, and Jack has no better or more necessary servants than those nerve-cells in his lowest telephone exchange.

The heart itself is strictly and literally a pump—not like a pump, but actually a pump. There are two kinds of pumps, those which press, or force, a fluid to move, and those which move it by suction. The pump in Jack's house is a force-pump of which the walls are alive.

THE FOUR CHAMBERS WITH THE LIVING WALLS

But, though the heart is truly a force-pump, it is much more complicated and infinitely more wonderful than any

other pump in the world. It has four spaces, or chambers, inside it, each with its own living wall, and each with a strong and perfect valve, so that the blood can only move forward, in the direction which Jack requires. The muscular walls are made of living cells, long and narrow, which have the power of making themselves short and thick. These living cells, or muscular fibres, are Jack's humble but invaluable servants, his "drawers of water," and they are arranged in the walls of his pump in a most complicated way, which it would take a book to describe. It is these cells, or fibres, that do the actual work on contracting the heart and forcing out the blood.

The other great fact about the pump is that, at various places in its walls, it contains numbers of nerve-cells, which order the muscle-fibres to contract. But it would never do for Jack's pump to work independently, without reference to the needs of the whole, so these nerve-cells, which rule the muscle-cells of the heart, are themselves under the control of the vagus nerves, and also of another pair of nerves, which do not act all the time, but can be used on occasion. When they act they make the heart beat more powerfully.

HOW THE PUMP DRIVES THE LIFE-STREAM ROUND AND ROUND

A great Englishman, William Harvey, about whom we read in another place, found out what happens when the four chambers of Jack's pump beat and drive the blood. Harvey found that the blood goes right round the whole of Jack's house in a circle, or, rather, in two circles, which meet in the heart. The pump is really two pumps—a left pump, which drives the blood to all parts of Jack's house, and a right pump—not quite so strong—which only drives it to the lungs in order to receive pure air and get rid of foul air. We shall understand this better when we come to study the ventilation system.

We now have the picture of this great pump, which is placed in the very middle of Jack's house, and beats away, night and day, so long as he lives, driving his water-supply through a system of closed pipes, which leave his heart and return to it; but we shall not see any use in this process unless we understand that these pipes are of a very unusual kind.

JACK'S WONDERFUL PUMP

The various pipes have various names—arteries, veins, and capillaries. Not one of these, however, has any holes in it, and, so far as we can discover by looking at this water system, it simply goes round and round within these closed pipes.

That would be a useless performance if it were so. But the smaller pipes, called capillaries, because they are as fine as hairs, are exactly what the pipes of an ordinary water-supply ought not to be, *for they let things through*, and that is the essential point of the whole wonderful system. They leak both ways, so to speak, and let all manner of things be taken out of the blood, and also let all manner of things into it through their porous walls. The whole object of Jack's pump, and of this system of pipes, is to allow this passage in and out, through the walls of the capillaries.

In one other point, above all, do these pipes differ from those of any ordinary water-supply. They are lined with living servants of Jack, muscle-cells very much like those in the great pump itself. Thus the size of the pipe in any given place can be altered at will—or, rather, not at will, for these servants are controlled from Jack's lowest telephone exchange, and not by his will at all. They are under the control, everywhere, of two sets of nerves, one set making them contract and narrow the pipes, and another making them relax and widen the pipes.

WHAT IT IS THAT HAPPENS WHEN WE BLUSH

We see the consequences when, for instance, we blush, and feel a flood of warm blood surging through our cheeks. The order has gone forth, quite apart from or even against our will, to open the sluice-gates, and then the blood pours through into the capillaries of the face. After every meal, the walls of the stomach are made to blush in just the same way; and Jack's house could not exist if it were not for these automatic arrangements, or "reflex actions," as they are called, whereby his lowest telephone exchange controls his pump and his pipes.

And now it is time to study the marvelous fluid which is driven by Jack's pump through the system of pipes or flexible tubes which we call his blood-vessels. What is it made of? What is the good of it? Where does it come from?

In the first place, as we have just said, it is the water-supply of Jack's house. This is no small matter, for water is far more necessary in his house than in any other. It is certain that all kinds of houses which living things inhabit—animals, or plants, or men—require water. In Jack's case the water is entirely taken in by his mouth—not by his skin at all; just as, in the case of a tree, the water is all taken in by the roots, not by the leaves, no matter how wet with rain or mist or dew they may become.

THE PRECIOUS THINGS THE RIVER CARRIES

The water which enters runs down Jack's red lane, and is picked up by the capillaries that line the walls of his great corridor. Then, of course, it forms part of his blood, and is driven along by Jack's pump. The other half of the story is that, just as the water leaked *into* the pipes at one place, so it leaks *out* of them at others after its work is done. It is always doing so.

The water which enters the blood from the central corridor leaves it by leaking through the capillaries of the kidneys, the capillaries of the skin, and the capillaries of the lungs. This leakage of water never stops—it is always going on. Every breath we breathe out contains water; water is always leaving by the skin, and water is always being filtered through the kidneys. In all these cases the water carries with it rubbish, so that Jack's water-supply is also a drainage system.

THE FOOD FOR JACK'S MILLIONS OF SERVANTS

Jack's system, however, is no ordinary water-supply. It is a river of life, ever flowing, and carrying on it, or, rather, in it, many things just as necessary for the house as the water itself. Indeed, after food has been chopped up and cooked in the kitchen, all the useful parts of it are taken into the blood, just like the water. The pump, therefore, sends through the body not only water but also the food necessary to build it up and keep it in repair.

Here, again, comes in the beauty of the fact that the smallest pipes of this water system are so thin that they leak; and, more especially, that they leak in such a way that they let through only what is wanted. For now we come to the *real* eating that goes on in Jack's

house. All his millions and millions of servants require food, and one of the great duties of his pump is to carry their food to them as they work away in the dark.

THE RED AND WHITE SERVANTS WHO GET OLD IN SIX WEEKS AND DIE

Thus the blood which is always being pumped from the heart, and has first reached the heart carrying all kinds of food and fuel from Jack's central corridor, is sent to every part of Jack's body; and leaks through the walls of the capillaries, together with much water, producing a fluid called lymph, which is the prepared food for all Jack's servants—the chemists in his laboratories or glands, the strong slaves that make up his muscles and so on. So the blood is not only water, but food also, for Jack's living servants, and it is just because they require food and water that Jack requires them.

This rushing life-stream, which carries food everywhere, is crowded also with living servants of Jack, some white and some red. The red ones never leave the stream. They are born inside Jack's bones and join the blood as it flows through the marrow of the bones. Then, for about six weeks, they travel round and round Jack's body, until they grow old and die, and break up. All this time their important duty is to carry fresh air from Jack's ventilating system to every part of his body.

THE WANDERING CHEMISTS WHO HELP JACK IN TIME OF DANGER

Jack's living servants are always breathing, and need air. A little air can be dissolved in the blood and carried along, but not enough for the needs of Jack's servants. The rest is carried by the red porters who inhabit his blood, and as they pass through thin-walled capillaries they give up this air, and then are pumped along until they reach Jack's lungs again, where each of them is again provided with a load of the fresh air that he has just breathed in.

If there are too few of these red porters in Jack's house, he is pale, gets out of breath too easily, and suffers from headache. Sometimes, however, if he swallows a little iron for a few weeks, his red bone-marrow will make many new red porters, and he will grow better.

The other inhabitants of the blood are the white cells, which carry part of

Jack's fuel from his great corridor to his liver. It has been discovered, too, that they are a sort of wandering chemists, who produce special substances for the benefit of Jack's house. For instance, if one of Jack's blood-vessels is broken, by a cut or a scratch, or in any other way, of course the blood begins to leak out all together; and if this went on long enough, Jack would die. But the white chemists of his blood produce, just at the right moment and the right place, a substance which coagulates the blood or turns it solid, so that it flows no longer, and the bleeding is stopped.

But we never see the white cells at their bravest until a burglary occurs in Jack's house—a thing which often happens. We shall find how the white cells are prepared to die by millions for Jack, and how they kill the intruders who seek to kill him. The whole story is wonderfully interesting.

HOW YOU MAY FEEL THE GREAT PUMP BEATING

Now put the forefinger of one hand on the front of the other wrist, and feel your "pulse." Then feel another pulse at the side of your neck, and then another which crosses the hard bone just in front of your ear. These are a few of the places where we can notice how the pipes swell at each beat of the great pump—swell to the fluid which is water-supply, food-supply and air-supply, and in which swim porters and soldiers. If the pump beats eighty times in a minute, think how many times it must beat in a life of eighty years, resting only between the beats, and with no wages but just enough to keep itself going.

This is the tireless, faithful heart, and we need not wonder that in all languages it is the symbol of courage which no dangers can daunt and of service which is true till death. Some of our most interesting expressions which describe bravery or cowardice make use of the word "heart" to strengthen their meaning; such as "brave-hearted" and "true-hearted," or "faint-hearted" and "down-hearted." The heart is the seat of life, and according as the heart is a good heart or a bad heart the whole body is affected, and it is the same with the character of a boy or girl, whose heart is good and true or weak and cowardly.

CONTINUED ON PAGE 6430.



SHAKESPEARE

The Book of MEN & WOMEN



MILTON

TWO MEN WHO TAUGHT THE INDIANS

HERE and there in the Book of the United States and in the Book of Canada you have read about the devoted band of Jesuit priests who went about among the Indians, and braved death by torture at their hands, that they might teach them to become Christians and give up their cruel, treacherous ways. One of the most distinguished of these men was Pere Jacques Marquette, who is known simply as Pere or Father Marquette, a gentle, kindly man, who won the love of the Indians among whom he taught. Twenty years before Pere Marquette began his mission to the Indians in the West, John Eliot, a Puritan clergyman, had begun to teach the Indians of Massachusetts. He preached to them and taught them for fifty years, and reduced their language to writing and translated the Bible for them. This story tells us of the lives and work of these two great men.

A PRIEST WHO LOVED THE INDIANS

AWAY in France in an old chateau in the city of Laon, which stands on the banks of the River Oise, a little boy named Jacques Marquette was born some hundreds of years ago. Jacques was a round-cheeked, joyous-hearted little fellow with generous, impulsive ways which won the hearts of all about him. The servants adored him, and Jacques' mother thought there was no other boy like him in all the wide world. Madame Marquette was a devout Roman Catholic, and she would often entertain Jacques for hours by telling him tales of the brave Jesuit Fathers who went out into far-away lands to carry the gospel of Jesus Christ to the heathen. Little Jacques, sitting on a hassock at his mother's feet and propping his curly head against her knee, would listen with shining eyes and parted lips to the stories of daring and self-sacrifice.

"Perhaps some day you may become a Jesuit Father, who knows?" she would say.

The years passed and the rosy-cheeked little fellow grew into a tall young man, with earnest eyes. His mother's cherished dream came true. Jacques became a Jesuit priest, and one day he said good-bye to all his friends and set sail across the Atlantic for the great, new land of America. Traveling in those days was very slow, and it was many months before the young priest

CONTINUED FROM 6010



reached the little mission on Lake Superior in the heart of the wilderness, to which he had been appointed. Once there, however, Father Marquette set to work with vigor and enthusiasm. He began to learn the languages of

the various Indian tribes, and then in an earnest, simple way told them how Christ had come down to earth to die so that all men might be saved.

The Indians listened perplexedly. At first they did not understand this white man with the long black robe, who went about with a strange look in his eyes and who talked about a Manitou who was all love. He did not seem like the white men they had met before. He did not seem to want anything for himself, and he would travel many miles in the middle of the night to help a sick child with his simple remedies. Gradually the Indians began to trust, and then to love him. They listened, too, to what he had to teach, for surely one who had no ends of his own to gain must speak the truth.

By and by the fame of the "Young White Father" spread abroad, and Indians from the more southern tribes began to come to hear him. One day there arrived at Father Marquette's little mission a delegation of Indians from the tribe of the Illinois, who lived far away on the "Great River." The strangers listened to Father Marquette

JULIUS CAESAR



HERBERT SPENCER

as he preached, and then they presented themselves before him

"Let the Young White Father come to the people of the Illinois," they said.

"I cannot leave my mission now, but I will surely come," promised Father Marquette, his heart aglow within him at the thought of this wonderful opportunity.

From this time on Father Marquette made it his special prayer that the way might be opened to him to go to the Indians of the Illinois. One day there arrived in the camp a small band of men under the leadership of a young man named Louis Joliet, who had been sent by Count Frontenac, to explore the "Great River." Father Marquette was instructed to go with him on the journey. It seemed so like a direct answer to his prayer that the good priest was filled with thanksgiving, and he eagerly prepared to join the expedition.

The journey began one bright spring morning late in May. The adventurers launched their canoes and paddled gaily over the sparkling waters of Lake Michigan to Green Bay, where they found an encampment of the Wild Oats Indians, who crowded around the white men. Father Marquette was able to talk to them in their own language, and he told them that his party was bound for the "Great River." The Indians listened to his words in polite silence, but when he paused, they tried earnestly to persuade the voyagers not to go forward.

"What are they saying?" asked Joliet, curiously.

"They say," said Father Marquette, "that we will surely be killed. They say that there are wild Indians and great water monsters and a horrible river demon." He turned to the Indians and spoke with a ring of triumph in his voice. "People of the Wild Oats," he said, "the white men are not afraid of river monsters or demons, for they have with them always the spirit of the great Manitou, who will let no harm happen to them."

Then the white men bade good-bye to the wondering Indians, and set out to paddle up the Fox River. The upper course of the stream was so shallow that the adventurers were obliged to carry their canoes and walk along the bed of the river. The way was rough, and often the sharp stones cut through the men's

moccasins, but the party was in high spirits. As they marched sturdily along, now and again one of them would break into a rollicking French song, and the others would take up the refrain in a resounding chorus. Joliet and his followers were filled with excitement at the prospect of adventure, and Father Marquette was radiantly happy in the thought that he was going into a strange land, perhaps to death, on his Master's business.

When they had gone to the head of the Fox River, they made a portage, that is, carried their canoes across the country to the Wisconsin River, and soon were floating on its pleasant waters. After a week on this river, they reached the Mississippi on June 17, 1673. The enthusiastic young missionary wrote that he saw the great river "with a joy that I cannot express."

Day after day, week after week, they journeyed down the "Great River." They encountered strange scenery, strange animals, strange birds and strange tribes of Indians of the interior. Wherever they came upon an Indian encampment, Father Marquette preached the gospel of Jesus Christ. "I know not whether they understood what I told them of God and the things which concerned their salvation. But it is a seed cast in the earth, which must bear its fruit in season," he wrote in his diary with his engaging hopefulness.

A thing that is strange to record, compared to every other narrative of the time, is that there was no quarrel between captain and priest. Father Marquette and Captain Joliet got along famously. The captain respected the shrewdness and good judgment of the young priest and often sought his advice. Joliet himself had studied to be a priest, but the wild, free life of the woods drew him away from his books to make him a famous explorer.

Although intent upon making converts of the Indians, Father Marquette was also keenly interested in the exploration end of the expedition. He tasted the mineral waters of Wisconsin; he tested on his paddle the colored clay used by the Shawnee Indians for coloring their skins; and he cheerfully wielded his canoe paddle with the best of the men. The two men were well matched.

As they got further and further down

the Mississippi, the heat became intense and the mosquitoes were so thick that they were almost unbearable. The explorers found that the Indians on the lower river slept on high scaffoldings, under which they built a smudge fire, and they too were obliged to resort to this method to escape the swarms of stinging insects. At last a few days more would have brought them to the mouth of the Mississippi, but Joliet had heard that the Spaniards were in possession of the land around the Gulf of Mexico, and after a consultation with his men, he decided to turn back.

On their return they turned into the Illinois River and paddled up to its source. Then they carried their canoes across to Lake Michigan. It is thought that they reached the lake near the present city of Chicago. Then they paddled up Lake Michigan to Green Bay again. In four months they had traveled more than 2,500 miles in their canoes.

On the way back they passed through the village of the Kaskaskia Indians, who begged Father Marquette to remain with them and establish a mission. But the young priest's health had been seriously affected by the tropical heat of the mid-summer sun and the unwholesome, moist climate of the lower Mississippi, and he was now very ill. He was very loath to leave the Kaskaskia without telling them of his "glad tidings," but his companions refused to leave him behind in the wilderness, and Father Marquette, who was too weak to protest, promised to return to the interior as soon as he was well.

When he was again able to travel, he set out with a little band of his convert Indians to keep his promise to the people of the Kaskaskia, but he got no further than the present site of Chicago, when he was again attacked by his terrible disease, so he was obliged to stop on his journey and spend the winter among the Indians of this region. As in every place where he had gone, he soon won the devotion of the Indians of the Chicago tribes. From all around they came to listen to the inspired words of the "Young White Priest." The Indians believed in Father Marquette and loved him as they believed in and loved no other white man. And why? Because he believed in them and loved them as no other white man had ever done. He saw no guile, nor treachery in the Indians. Where others saw only bloody, repulsive savages, he saw men—red, in truth, but with unselfish,



In the Capitol at Washington there stands a statue, erected by the State of Wisconsin, in honor of the brave missionary priest, Father Jacques Marquette, who was one of the first white men to explore the Mississippi River. The story of his life is a beautiful one, and it is no wonder the Indians loved him.

hospitable, generous natures and a deep religious sentiment.

In the spring of 1675, Father Marquette was again stronger, and he went on to the Kaskaskia to establish the mission, as he had promised. Here illness again overtook him, and he set out for Canada, accompanied by a handful of his Indian friends, to die among his own people. Day by day, as they hurried northward, the young missionary grew weaker, until at last, when they reached Lake Michigan, he knew that the end was near. He had met all his pains cheerfully and uncomplainingly, and now he faced death with a sort of exultant joy—joy that he should be allowed to die in his Master's cause. Quite simply he told his Indians that he was glad to go, and spoke

of the joy that awaited him. Then he asked to be carried to a little hillock that overlooked the lake.

"I thank you for your patience with me in my sickness," he said. "I am sorry to have given you so much trouble."

Then he told them to go to sleep and get a little rest. He would call them when he felt that death was coming. For a while he remained in silent prayer. Presently he called, and there in the wilderness, surrounded by a handful of devoted Indian converts, Father Marquette died at the age of thirty-eight. His bones were not allowed to remain in the wilderness, but were carried by some of his Indian converts to the chapel of the Mission of St. Ignace, which had been founded further up the lake.

JOHN ELIOT, THE APOSTLE TO THE INDIANS

WHEN Pere Marquette was a curly-haired boy, listening to his mother's stories, John Eliot, the great Puritan teacher, had already begun the work among the Massachusetts Indians which won for him the name of "The Apostle to the Indians." He aimed at nothing less than providing Indian teachers as missionaries to spread the gospel among their own people, and at that very time he was engaged in perfecting his knowledge of their language that he might be able to teach them to read.

John Eliot was born in England, in 1604, probably at a little town called Widford, in Hertfordshire, where he was baptized. We know little about his boyhood, except that he had a happy home, and was well taught, so that at the age of fifteen he was able to enter Jesus College, Cambridge, where he graduated at the age of nineteen. His father, Bennett or Benedict Eliot, was a yeoman, that is, a man who owned his land, but had not a large estate. He died when his son John was seventeen.

After he left the university, young Eliot became assistant in a school, where he taught for about seven years, and a delightful teacher the boys under his care must have found him. Some time during these years it is believed that he was ordained, and possibly he preached to the people among whom he lived. Certainly, he gained their friendship and confidence, and before he sailed away to

the New World, a number of them told him that they would follow him, and gained his promise that he would be their teacher. By this time Thomas Hooker, the principal of the school in which he taught, and probably John Eliot himself, had fallen under the displeasure of Laud, the Archbishop of Canterbury. The school had been broken up, Thomas Hooker had already left the country, and in 1631, John Eliot sailed for Boston to begin life there. The good ship *Lion*, in which he sailed, made a prosperous voyage. Ten weeks after he embarked he landed in Boston, where the people held a day of thanksgiving for the safe arrival of the ship, which also brought Governor Winthrop's wife and children. Throughout the winter, John Eliot ministered to the church in Boston, for Mr. Wilson, the pastor, had gone to England to bring his family to their new home. The young teacher won the love of the stern Puritans of Boston, but they could not keep him, for early the next year his friends arrived, as they had promised, and made a settlement at Roxbury, and in accordance with his promise, he went to them.

The following year, Hannah Mumford, or Mulford, to whom he had been betrothed in England, joined him. There was a simple wedding in Boston, and they began their long and happy life together in Roxbury. For sixty years thereafter, he taught and preached in Roxbury, and took

TWO MEN WHO TAUGHT THE INDIANS

a prominent part in the church affairs of the little colony. He was one of the three men who arranged the Bay Psalm Book, of which you remember we have spoken in the story of Songs and Song Writers. He was prominent, too, in educational matters, and was one of those who signed an agreement to build a free school in Roxbury and support a schoolmaster.

While he went about his duties, the state of the Indians weighed heavy on his mind. He was a man of loving spirit, and their savage life and pagan beliefs grieved him sorely. At length he took

grammar for it, and when that was done he translated the Bible into it. This took time of course. First he translated a little catechism, then the Book of Genesis, after that St. Matthew's Gospel, and so he went through the whole Bible, bit by bit. This translation of the Bible into the Indian tongue was the first book printed in New England.

Meantime he continued to teach the Indians, and to help them to live in a better way, he founded a town for them at Natick, where they learned to cultivate the land set apart for them, and he



John Eliot Preaching to the Indians.

into his house a young Indian, from whom he set to work to learn the language of the Pequod tribe so that he might teach them, and in 1646 he preached his first sermon in the Indian tongue in the wigwam of Kitchomakin, in a grove at the mouth of the Neponset River.

But this good man was not content to teach the Indians by preaching to them. He wanted them to believe intelligently the things that he taught them, and he wanted to raise them up from the wretched way in which they lived. Not content with learning to speak their language, he set himself to the task of making it a written language, and making a

taught them that cleanliness is next to godliness. His converts learned to read, and before admitting them to the church, he demanded that they should follow the stern rule of life laid down by the Puritans.

Every other Sunday, year in and year out, he went on horseback from Roxbury to Natick, which is some miles away, and it is said that his horse's feet made a beaten path through the woods. Stern though he might seem, he was sweet and loving and gracious and of a humble spirit. Always his horse was laden with comforts for the Indians, and his pockets were filled with cakes and apples and goodies for the children, whom he loved.

"The care of the lambs," he wrote, "is one third part of the charge over the work of God." When years told on his frame and his friends tried to induce him to give up his labors for the Indians he refused, saying, "I will never give over as long as I have legs to go." He firmly believed that the Indians were the remnants of the Ten Lost Tribes, of whom you have read in the Story of the Scattered Nation. He hoped to bring them back to the state from which he believed they had fallen, and so he labored for them year after year. In one winter he translated the whole Book of Psalms. At first he preached under a great oak tree, which still stands at Natick; but after a time a church was built, in which there was an upper chamber, where the apostle might spend a restful night after the labors of a day of preaching and teaching were done.

Not content with teaching at Natick, he went on missionary journeys, and it is said that he traveled through the woods from Cape Cod to Concord. At first he not only had to face the danger of capture and torture by hostile Indians, and to work against the opposition of the Indian chiefs, but he was also opposed by the settlers, who believed that no good could be gained by teaching Indians. Nevertheless he persevered. As the years went on many converts were made, and there were no less than seventeen villages of what were called "praying Indians." But in 1675, an Indian chief, known as King Philip, made war against the English settlers. He and his followers and allies committed such cruelties that the settlers were roused to a state of fury against all Indians, and though few of John Eliot's converts joined Philip, they were all removed from their villages to Deer Island and to Long Island in Boston Harbor. After a time, at John Eliot's earnest request, they were allowed to help the settlers to overthrow Philip, and later they were permitted to return to Natick, and three other villages, but the Christian settlements were never so strong again. After the war was over, John Eliot protested against the sale of Indians as slaves. His charity was never failing, and it is known that at his own cost he brought back one man who had been sent to Jamaica, and also redeemed the wife and children of this man.

In 1687 the greatest grief of his long

life came to him when his wife died. All his life she had been his greatest helper. It was she who looked after the household, and saved him from all worry about his money affairs, so that he might devote himself to his teaching and translations. "I shall go to her," he said, "but she shall not return to me," but he lived on three years longer and died at the age of eighty-six. "No missionary," one of his successors says, "who ever labored for the gospel, had a nobler zeal; no martyr who ever faced the flames had a more heroic spirit; no saint had a saintlier soul. His missionary spirit and earnestness were as wise as St. Paul's, his charity and sympathy as sweet as St. Francis d'Assisi's, and as years go on he becomes one of the most commanding figures among all the English Puritans who entered into the early life of America."

An Indian missionary, who had been ordained some years before John Eliot's death, tried to go on with the work among the Indians, but he had not the authority that a white man would have had among them, and he was not successful. John Eliot was almost alone among the settlers in his belief in the Indians. His son John, whom he had trained to take his place, died over twenty years before him, and no one had enough interest in the mission to carry it on. Gradually the Indians fell away, and in 1716 their church was closed. Another church has been built on the site where it stood, and close by a monument has been erected to this self-sacrificing missionary, who was one of the very few to claim justice for the Indians, and to seek to teach them how to take their place in the civilization of the white men among whom they had to live.

He saw very clearly that as long as they kept to their old ways of living it would be very hard for them to hold to the truths of Christianity, which he taught them. He believed that if they were to be really Christians, they must learn the ways of Christian civilization.

His efforts as a pioneer in education are overshadowed by his fame as a missionary, but the people of Roxbury do not forget that he never ceased to declare the need for education in the colony, and that the year before his death he gave seventy acres of land at Jamaica Plains to support a school.

THE NEXT STORY OF MEN AND WOMEN IS ON PAGE 6171.

INDIANS OF THE WEST AND OF THE EAST

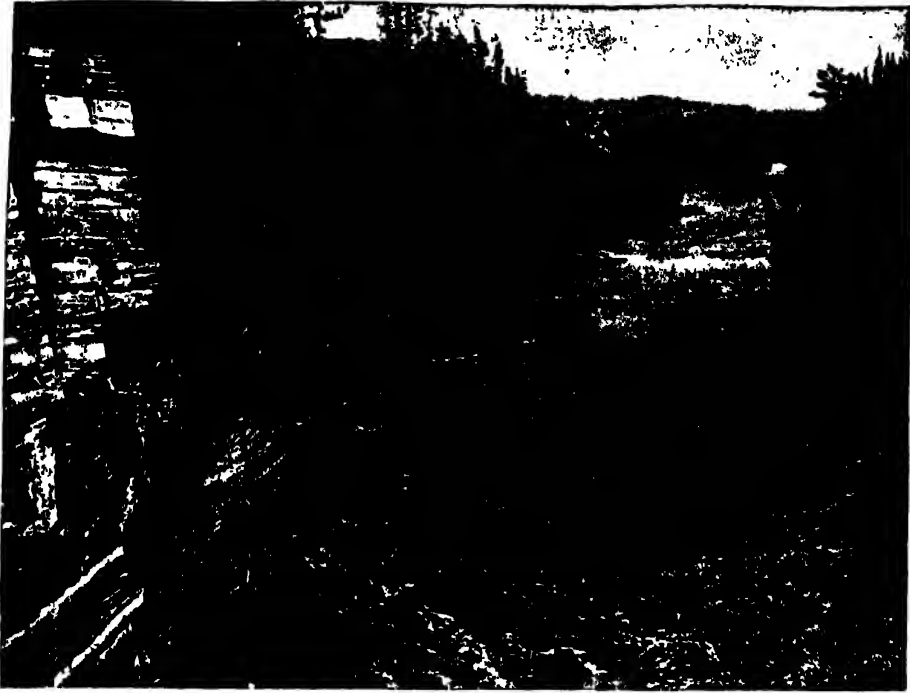


Father Marquette and Louis Joliet floated down the Wisconsin River into the Mississippi, June 17, 1673, and here we see them lost in wonder at the sight of the mighty stream. You can read the story of their voyage down the river, and of their return trip, in the text. This was the first real exploration of the course of the river, though it had been discovered long before.



King Philip, whose real name was Metacomet, was a chief of the Wampanoags, and plotted to kill all the whites in New England. War broke out in 1675, and raged for over a year. Philip was finally killed by an Indian in 1676. This conspiracy almost broke up the work which John Eliot had done among the Indians, as some "praying Indians" could not resist the temptation to join Philip against the whites.

ONE OF CANADA'S RIVERS

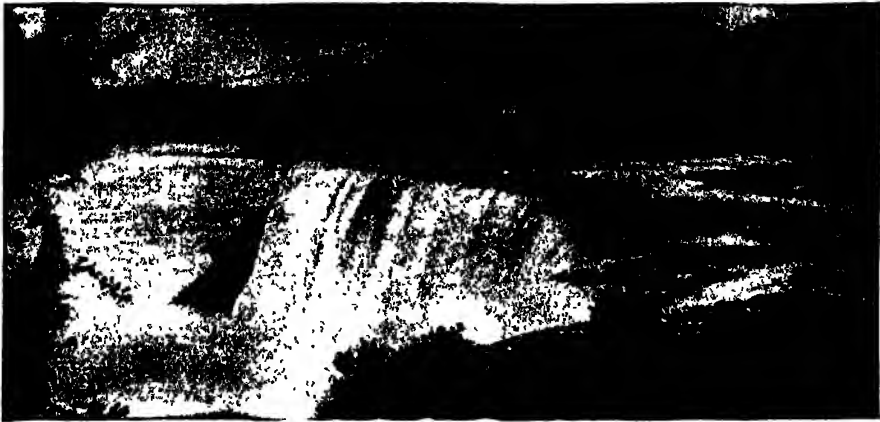


One of the most beautiful rivers of Canada is the Kaministiquia. We show you here its more restless appearance, as it dashes over stones and apparently struggles to be free. Notice the different strata in the rocky banks through which the river has cut its way. The beautiful Falls of Kakabeka are on this river.



Here is the same river, though you can hardly believe it. This quiet and placid stream with the grain elevators along its banks and the steamers on its waters seems entirely different from the restless stream above. The town is Fort William, Ontario, which is a centre of the grain trade.

Pictures copyright by H. C. White Co



The Canadian Side, Niagara Falls.

THE GREAT LAKES AND THE ST. LAWRENCE

HISTORIANS tell us that rivers have a great influence on the destiny of nations. A writer of geographies has lately called the St. Lawrence a roadway into the heart of the continent. Before we set out on our journey down the pathway made by this noble river, let us stop for a moment, and think of the influence that it has had on the history of Canada.

Up this great and shining roadway came Cartier on his voyage of exploration. Champlain followed it. The farms and villages of the early settlers were built along its banks. La Salle made his way along it on his way to find the Mississippi, and it was the road by which the adventurers, who followed after him, traveled when they sought to bar the valley of the Mississippi from the English colonies in the East. If it had not been for this great highway, it may be that the history of this whole continent might have told a different tale.

HOW THE GREAT LAKES WERE MADE

Once on a time, you know, there was no river and there were no Great Lakes. All the northern part of the continent was covered with ice which

filled the valley. Now if you look at your map, you will see that the centre of the whole continent is a great plain. But as you trace the courses of the rivers you will find that the southern portion of the plain is tipped toward the south. In the centre there is a low height of land. The rivers to the north of this flow toward the north and east, while those on its southern side flow southward. If it were not for this height of land, it is probable that the water from most of the lakes would flow to the Mississippi and the St. Lawrence would not exist. It is strange to think that a little height of land, which was perhaps pushed up by a glacier, far back in the ages, could alter the history of the world.

In the glacial period—the time of cold—all the northern region was covered with ice, which, as it moved onward, scraped the sides of mountains bare, ground out basins, deepened valleys, and in other places raised the surface of vast tracts by overlaying the land with the drift of earth and rocks it carried. Ages passed, and the air became warm again. The ice melted, and in its place a great expanse of water re-

CONTINUED FROM 5918



mained But the water found outlets, as water will. Gradually the higher land was drained, but the deep basins held their water, and this was the origin of the chain of Great Lakes and the River St. Lawrence, which flows through them and carries their overflowing waters to the sea. We call them lakes; but really they are inland seas, and hold within their deep basins half the fresh water there is in the world.

WHERE THE ST LAWRENCE REALLY BEGINS

We usually think of the St. Lawrence as rising in Lake Ontario. Really it rises in Lake Nipigon, north of Lake Superior, and flows down through all the lakes, though we call it by different names. The lakes are like the fountains, made in steps, that you sometimes see. The water overflows from one into the other, but the stream is continuous. The St. Lawrence with its tributaries drains over four hundred thousand square miles of territory, most of it in Canada.

On this trip, our starting place is at Fort William, at the head of Lake Superior, where we have come to meet a beautiful steam yacht that is to take us down through the Canadian waters of the lakes. Fort William was a headquarters of the Hudson's Bay Company, and every year the officials held high festival there. But the days of the Fur Company are gone. Wheat is king in Fort William, and huge elevators mark its power. The golden grain is gathered in these elevators from the prairie lands, and much of it is shipped by boats which go down the lakes, canals and river to Montreal.

We shall not see the wild and rocky northern shore of Lake Superior. We pass out of the harbor, pass Thunder Cape and Isle Royale, and keep almost a straight course across the lake. At White Fish Bay we pass the lighthouse and find the entrance to the Sault Ste. Marie, where the overflowing ice-cold waters from Lake Superior plunge themselves down the rapids to reach the lower level of Lake Huron. The rapids are so dangerous that canals, of which we may read in other places, have been built to make a passage for the ships; but while our boat makes her slow way through the lock, we hire an Indian guide and his canoe and shoot the rapids, as the Indians, the early French, the coureurs-de-

bois, and many a hunter and trapper in long procession have done before us.

THE BEAUTIFUL REGION OF GEORGIAN BAY

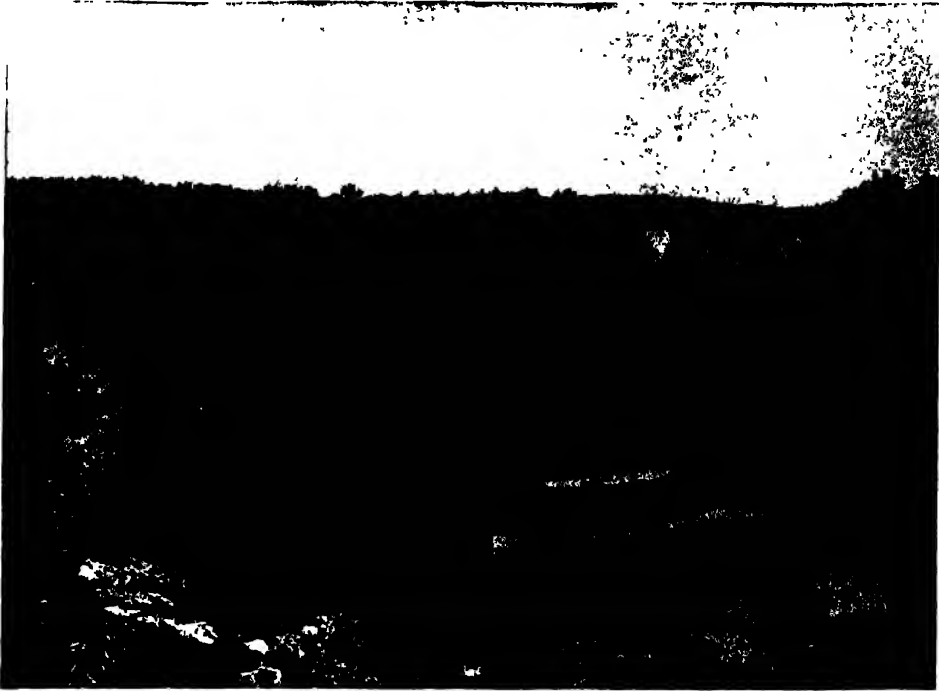
After we have passed the canal at Sault Ste. Marie, which we remember means the Falls of St. Mary, we sail down the St. Mary's River, as our river is here called, into Lake Huron. We should like to pass down below the island of Mackinac into Lake Michigan, which is surrounded by the state of Michigan. We want to see Green Bay, where La Salle landed, and the great city of Chicago, which has grown up on the site of Fort Dearborn, but our host tells us we must leave that for another time. Our captain turns the bow of our staunch little boat across Lake Huron, past Pelee Island, famous for its grapes, between Manitoulin and the mainland into Georgian Bay, one of the most beautiful stretches of water that the world holds. Islands meet the eye on every side; some of them are rocks, some of them little islands with a tree or two, thousands large enough for a summer cottage or a camping place.

North of Lake Huron, in the Sudbury district, are the great nickel and copper mines, of which we have read on page 6092, and on Manitoulin Island there are copper mines, but our minds are filled with the beauty of the scene and we have little thought left to-day for natural resources. We take our leisurely way through the islands, and stop at the little town of Collingwood, where great freight ships are built. We stop at Owen Sound, then sail out again into Lake Huron, through the St. Clair River, and Lake, and the Detroit River into Lake Erie. Now we sail along the southern shore of the peninsula to Port Colborne, where we enter the Welland Canal, and enjoy the novel experience of steaming down its placid waters through fields and country villages to Lake Ontario. Once we have reached the lake, we leave our yacht, and take the train for a visit to the Falls of Niagara, those famous falls that the Iroquois called the "Thundering Water."

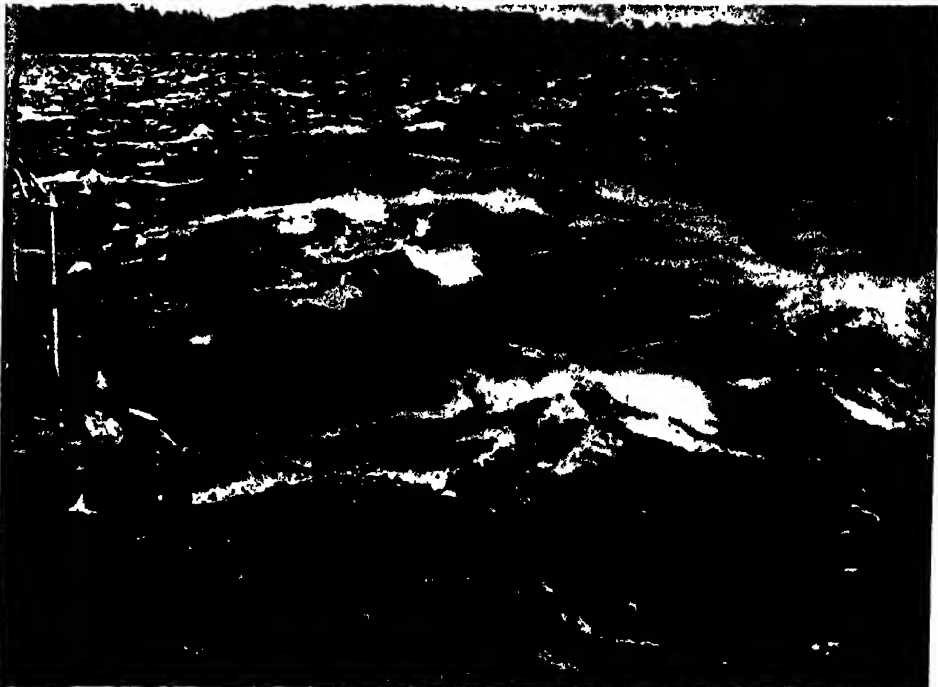
WHERE THE "THUNDERING WATER" COMES FROM

Let us think for a moment what this thundering water carries. Back of it are four of the Great Lakes, Erie, Huron, Michigan, and Superior. When the over-

THE MARVELOUS RIVER



No part of the St. Lawrence is more beautiful than the section including the Thousand Isles. Some of the Islands, as you see, are only ledges of rock standing above the water, others are very large and on them are built the cottages of the summer residents. Some of these are really palaces.



In the text you are told of the excitement of running the rapids of the great river. Here is just the edge of a boat going down the Long Sault Rapids, one of the most dangerous of the whole series. The pilots are so skilful that an accident is almost unknown.

Pictures copyright by H. C. White Co

flow from all these lakes enters the Niagara River, it flows quietly between its wide banks until it reaches the rapids a little way above the Falls. At the head of the rapids, the waters begin to hurry, hurry, hurry, as if in haste to make the adventurous leap beyond, and when they reach the brink of the chasm, down which they must roll to the lake, they leap forward into the abyss, a hundred and sixty feet below. We cannot tell what impresses us most, the hurrying water at the rapids, which we could watch for hours, or the sublime spectacle of the great mass of water as it leaps into the chasm below. From the foot of the precipice the water rushes down a steep incline between narrow banks, to the whirlpool, where it strikes against a jutting point of land and is sent back in a sweeping current to swirl round and round before it escapes. We follow down its steep banks, fascinated by the swirling waters that rush by far below our feet until at last they reach a gentle slope, and flow quietly down to meet the blue waters of Lake Ontario. The great water power from the Falls is used to work factories and run electric railways from Buffalo to Toronto.

KINGSTON, THE WEST POINT OF CANADA

At Niagara-on-the-Lake, which we remember was once called Newark, and was the first capital of Upper Canada, our yacht meets us, and we sail across the lake to Toronto. Passing by Burlington Beach, we keep within sight of the land, for there are many pleasant places along this shore. We make no stay at Toronto, for our vacation time is drawing to a close, and we have much to see, so we go on our way straight through the lake until we reach the city of Kingston. The city is beautifully situated where the St. Lawrence flows from Lake Ontario. Most of the buildings are of gray limestone, and so it is called the Limestone City. It is a quaint, attractive place, full of historic interest, for it was built on the site of Frontenac's fort, and was once the seat of the government of Canada. The Military College, Canada's West Point, is here, and Queen's University ranks with Toronto University and McGill. The massive gray stone forts, the quaint Martello towers, and the imposing public buildings, all make the city very full of interest.

Opposite the city, the St. Lawrence leaves Lake Ontario. Seldom less than two miles in width, it is two and one-half miles wide where it issues from Lake Ontario, and with several expansions which are called lakes it becomes eighty miles in width where it ceases to be called a river. The influence of the tide is felt over five hundred miles from the gulf, while it is navigable for sea-going vessels to Montreal, eighty miles farther inland. Rapids prevent navigation above this point, but by means of canals, boats pass from Montreal to Lake Superior.

If inferior in breadth to the mighty Amazon, if lacking the length of the Mississippi, if missing the ancient castles of the Rhine, if wanting the lonely grandeur that overhangs the Congo, the majestic St. Lawrence has features as remarkable as any of these. It has its source in the largest body of fresh water upon the globe, and among all of the large rivers of the world, it is the only one whose volume is not sensibly affected by the elements. In rain or in sunshine, in spring floods or in summer droughts, the river seldom varies more than a foot in its rise and fall.

THE THOUSAND ISLANDS

Where the great Laurentian chain of mountains, running from east to west across Canada, swings southward to enter New York, it drops a link as it were, and allows the last of the big lakes an outlet into the channel of the St. Lawrence, which moves sluggishly among the numerous islands, helping to form the most picturesque archipelago in the world. The actual number of islands in this Lake of the Thousand Isles is near two thousand, varying in size, shape and appearance from a small barren rock, projecting from the surface of the river, to larger ones ornamented by summer residences varying in style of architecture from the modest cottage of the camper to the magnificent castle of the millionaire; and finally islands of large area covered with many farms.

Leaving Kingston, we wind in and out among these charming islands to the American town of Clayton, noted as a summer resort. Below this thriving town, island after island studding the quiet waters rises into view, the finger-tips of the great mountain range.

On one of these larger isles is located the "Thousand Island Park," while a little below is the fashionable resort known as the "Saratoga of the St. Lawrence," Alexandria Bay.

From Clayton to Chippewa Bay the river with its clustered isles is like a fairyland. Hundreds of islands lie across the course of the steamer, all differing in size, coast, coloring, and forming an intricacy of channels amid which only an experienced pilot can guide a boat. Now we are entering a narrow pass between cliff-like banks covered with moss and trailing creepers, then we open into a lake-like expansion, then again among winding courses, through clustering islands and round rocky points. Everywhere art has combined with nature to enliven the scene. Islands are dotted with cottages in all sorts of picturesque surroundings, some perched on rocky bluffs showing among the trees, others snugly resting on low-lying islands or nesting in beautiful coves along the mainland. During the summer season the grand illumination of the islands takes place on Wednesday and Saturday evenings, when the entire region is transformed into a fairyland which must be seen to be appreciated.

The last of the Thousand Islands are called "The Three Sisters." Scarcely have we emerged from the still lingering images of the beautiful island scenery when the spires and roofs of the Canadian town of Brockville come in view. This town, named after General Brock, is built on an elevation which ascends by successive ridges from the St. Lawrence. A few miles below, Ogdensburg on the American side and Prescott on the other, stand like sentinels long on duty.

THE RAPIDS OF THE ST. LAWRENCE

At Prescott we leave the yacht, which we send down through the canals, and change to a river steamer with large observation decks. Soon after the last glimpse of Prescott fades in the distance we enter the Galops, the first of the series of rapids marking the downward flight of the waters. These are only a foretaste of what is to follow. We rapidly pass the picturesque Canadian towns of Cardinal and Iroquois. A little distance below Iroquois the Rapids du Platt swirl their dark green waters among a group of wooded islands. After

shooting the du Platt, the steamer glides with increasing motion past a picturesque point named Woodlands, and in and among bolder shores on the north side of Croyles Island into sight of the turbulent waters of the Long Sault with its snow-crested billows of raging waters. This, the greatest of the really remarkable rapids of the St. Lawrence, extends about nine miles down stream to Cornwall and is divided into channels by numerous beautifully wooded islands.

The "shooting of the rapids," as the descent by boat is called, is a most exciting experience. Navigation of the Long Sault requires exceptional nerve and precision in piloting as well as extra power to control the helm; hence the rudder is provided with a tiller besides the regular apparatus, while four men are kept at the wheel to ensure safe steering, and as a result of such precautions accidents are unknown.

The St. Lawrence expands below Cornwall, forming the beautiful Lake St. Francis, twenty-eight miles in length. Below the lake we enter the Coteau Rapids. These rapids, about two miles long, are very beautiful and have a very swift current. About seven miles further down we sweep past a small island where the trees almost dip into the hurrying stream, and rounding a sharp curve we enter the Cedar Rapids. On the left is a beautifully wooded island and on the right is Hell's Hole, the greatest commotion in the river from Kingston to the gulf. These rapids are very turbulent and the passage is very exciting. Scarcely has the boat left the Cedar Rapids before she enters the Split Rock Rapids, with many submerged boulders guarding the entry. One cannot restrain a shudder as the ship approaches these threatening rocks, but the skilful hand of the helmsman turns the boat aside and it passes by unharmed.

A short distance below are the Cascades, the last of this series of rapids, made conspicuous by white-crested waves which mount tumultuously from the dark green waters in a choppy, angry way. This group of four rapids following one another in close succession extends in length about twelve miles.

Below the Cascades the river expands into Lake St. Louis. Its shores are among the beauty spots of the St. Lawrence. After issuing from the lake we

pass the town of Lachine, nine miles from Montreal. Just below the town the steamer glides into mid-stream, that moves with increasing speed, indicative of the coming rapids, which now appear in full view. And soon we enter the last of the St. Lawrence rapids, the Lachine. A moment more and we have completed the descent and ride in tranquillity on the quiet waters below. Passing the beautifully wooded shores of Nun's Island, we see the famous Victoria Jubilee Bridge.

Sweeping beneath the great bridge, we come in full view of the City of Montreal with its busy harbor, beautiful buildings of massive stone, stately churches and cathedrals, noted colleges, famous parks, and most of all, its royal mountain, lifting its imperial head seven hundred and forty feet above the din and noise of the street.

DOWN THE ST LAWRENCE

Leaving Victoria Pier we first pass Longueuil, a village on the south bank. The first town of note is Sorel, at the mouth of the Richelieu River and forty-five miles from Montreal. It stands on the site of the fort built by de Tracy in 1665 and was for many years the summer residence of the governors of Canada. About five miles further down, the river expands into a vast sheet of water, twenty-five miles long and nine miles broad, known as Lake St. Peter.

Passing the mouth of the St. Francis River, we arrive at the city of Three Rivers, midway between Montreal and Quebec. Continuing the journey, we pass St. Anne and the Jacques Cartier River, after which the land on the river banks begins to rise, presenting a bold and picturesque appearance as we near Quebec, the only walled town in North America. The mouth of the Chaudiere on the south next attracts our attention, and next the great cantilever bridge, of which you see a picture on page 33. As our little boat passes beneath the bridge we wonder at its size, and marvel that men could be found great enough to think of such a structure. Before us is the grand gateway of the St. Lawrence, and on our left, crowning Cape Diamond, is the famous citadel of Quebec. This lofty fortress, which covers an enclosed area of forty acres, three hundred and sixty-five feet above the river, was built from plans

approved by the Duke of Wellington. Since the withdrawal of British troops in 1871, it has been garrisoned by Canadian soldiers. The old walls of the Upper Town still stand, but the city has spread far beyond them.

THE GRANDEUR OF THE SCENERY ON THE LOWER ST LAWRENCE

Leaving Quebec, we pass the Isle of Orleans on the left, and near its eastern end Mt. St. Anne raises its head twenty-seven hundred feet above the river, and a short distance below the end of the island Mount Tourmente, nearly two thousand feet in height, with its lonely lighthouse looms against the sky. We pass Capes Burnt and Rouge and a short distance further on is Cape Grebaune, which towers twenty-two hundred feet above the steamer. A few miles eastward is Murray Bay, the favorite watering place of the Lower St. Lawrence. The river here is fifteen miles broad and its waters are as salt as the ocean itself. Murray Bay, with the grand old Laurentian mountains behind and the river in front, furnishes a variety of scenery not often found in combination.

Some miles below Murray Bay the Pilgrims are seen. They consist of a remarkable group of rocks which are visible at a great distance "the mirage" seems to dwell about them. We now reach Tadousac, at the mouth of the Saguenay River. This town was the first settlement made by the French on the St. Lawrence and was their principal fur-trading post. From this point the northern shore is rough and broken while along the southern there is an almost continuous chain of fishermen's hamlets, farmhouses, villages marked by windmills, forests and green meadows, with here and there a silvery stream winding sluggishly down to the river. The St. Lawrence grows wider and wider until it has a width of eighty miles, when it is lost in the gulf of the same name.

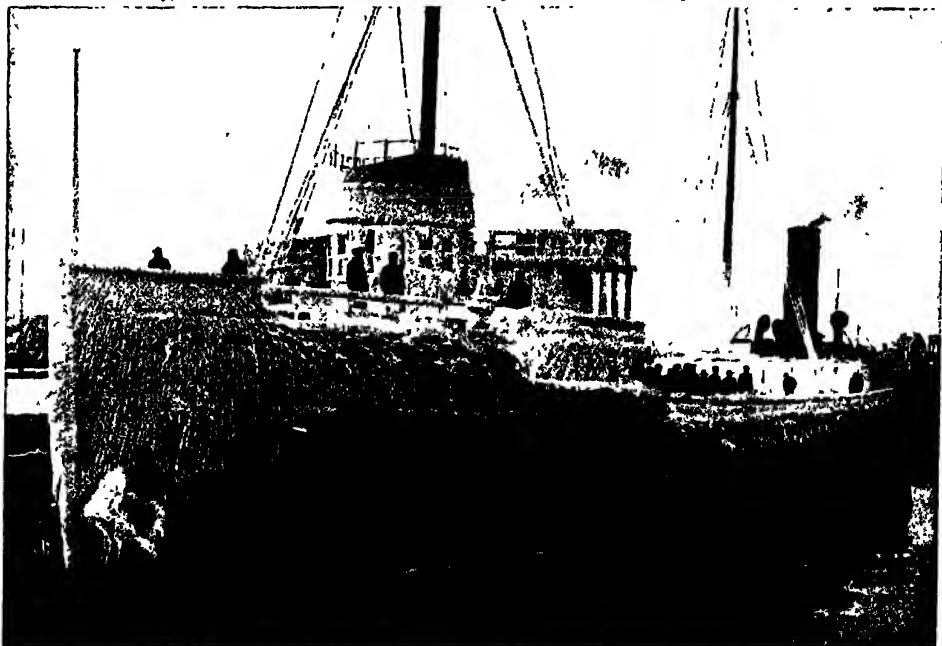
No other river can boast of such a chain of inland seas along its course, or has such a wealth of picturesque islands. Its banks have seen the conflict of races for the mastery and the struggle of nations for the possession of a continent. We may well say that in its majestic course from lake to the broad ocean, the St. Lawrence offers to the traveler more of beauty and romance than any other river in the world.

THE NEXT STORY OF CANADA IS ON PAGE 6293

SUMMER AND WINTER ON THE LAKES

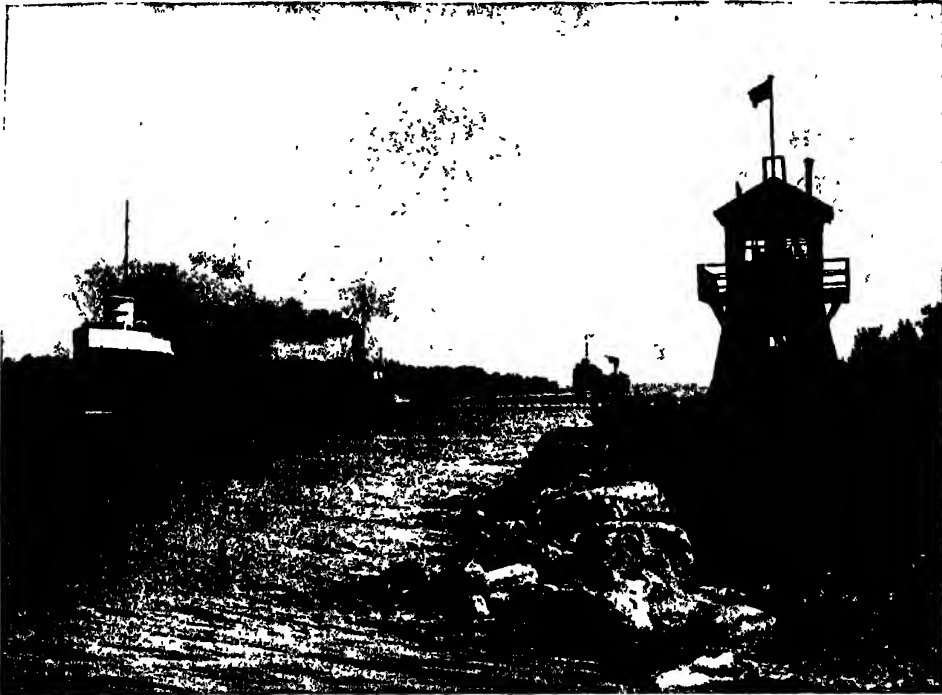


This picture shows a freight boat coming down the St. Mary's River from Lake Superior to Lake Huron, on a calm summer evening. The river is very wide and is divided by islands, one of which you can see in the picture. It is the boundary line between the United States and Canada, and some of the islands belong to the one country, and some to the other. The scenery of the river is very beautiful.

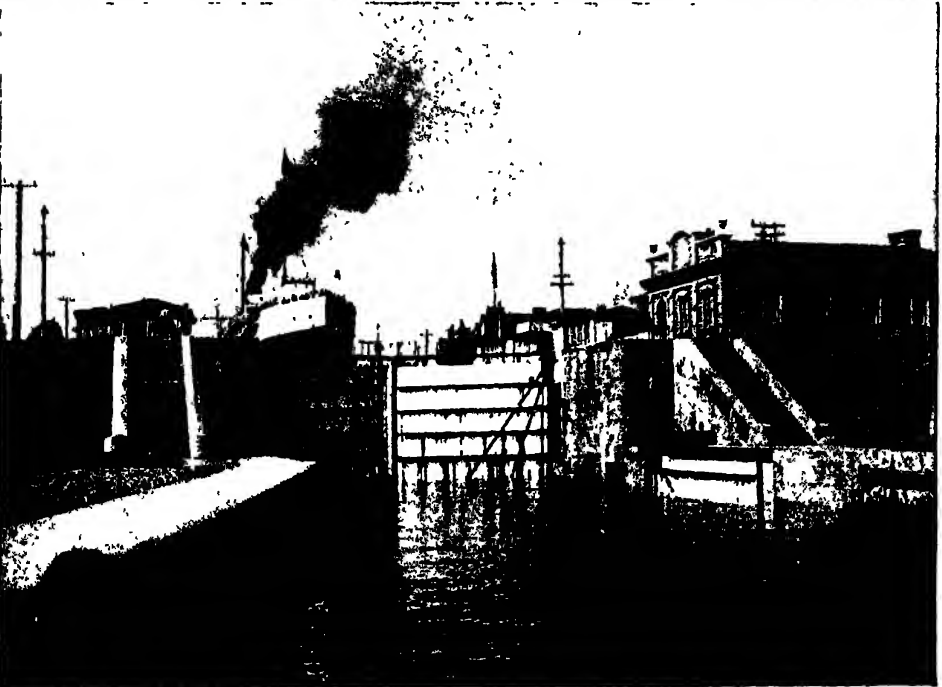


This boat has just come down the same way as the boat shown above. Dreadful storms rage on the Great Lakes in the winter season, and after about the middle of November navigation is not safe. The brave men on this boat have just brought her down from Lake Superior in December, but you can tell from her icy coating what a struggle they have had. Many boats have been lost in storms on these inland seas.

HOW A SHIP GOES DOWN A HILL

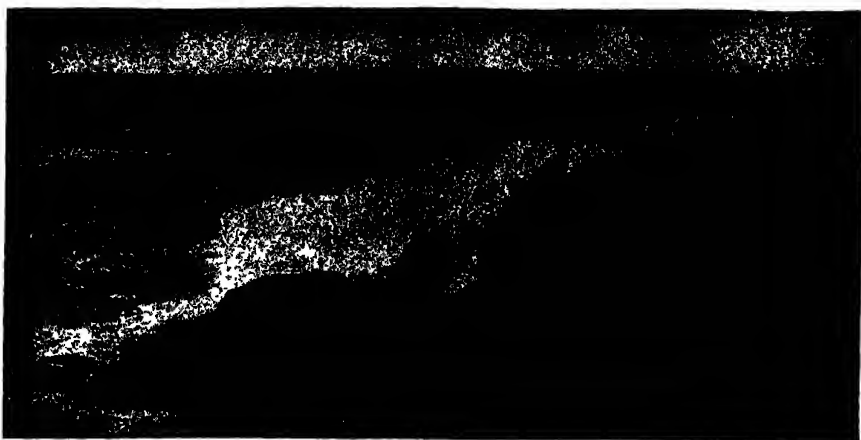


This picture gives us an idea of the freight that passes through the St. Mary's River. If the picture were large enough you could see another large boat in the distance. They hold a beautiful line as they steam through the channel, one following the other at a safe distance. This is the Michigan Channel of the river, as you may see from the coast guard station on the right. The men on duty report each boat that passes.



This picture shows a boat coming down through the Canadian canal at Sault Ste. Marie. From the position of the boat you can see that the lock is full of water. To "lock" her through, the upper gates of the lock are closed by powerful machinery; the water in the lock chamber is allowed to run off gradually until it is on a level with the water outside the lower gates; then these gates are opened and the boat goes on.

The Book of STORIES



THE LITTLE SPINNER AT THE WINDOW

WHY THE FINE SHAWLS COME FROM SHETLAND

LONG ago, far away in the Shetland Islands, there once lived a little lame girl called Grete. Her home was built on the shore of a loe, or sea lake, that ran quite a distance inland. It was built of rough stones, and had only one window.

The roof was covered with green sods, with big white daisies and other flowers growing on it; wreathed, too, with ropes of seaweed, wound round stones, to prevent the sods from being blown off in high winds. There was no garden, but the ground was covered with white sand, full of pink and white and yellow shells, for the green waves curled at its edge only a little way off.

There was a fire of peat in the middle of its only room, and as there was no chimney the smoke had to find its own way out, so the walls looked black and dismal. Then, a calf or some lambs, or even some little pigs, often shared the fireside in cold weather, and there was scarcely any furniture, for Grete and her mother were very, very poor. But they had a spinning-wheel and spun the sheep's wool into yarn, and knitted thick stockings and clothes for the fishermen.

On a sunny summer day the little island looked like fairyland, with other fairy islands shining in the distance, but Grete, who would sit at the window with her spinning-wheel and

CONTINUED FROM 6028

look out upon the island, knew it in winter storms as well, and was afraid then of the great sea which had caused her father's death, and her own lameness. For poor little Grete could not run about and join in games. Often, for days, she had to lie on her back, bearing a cruel pain that sometimes brought tears to her eyes.

One day when the sea roared, and the spray struck against the small window, dimming it so that it was impossible to see out of it, Grete, whose leg ached badly, was lying on the bed by the window.

For once the girl's busy fingers were idle, as she watched a big spider who was beginning to spin his web in the corner of the window. When she first noticed him he was running a line from one corner to the other, then he went back to the middle, and made a line fast to another corner, and after making a sort of wheel with a lot of spokes all joining in the middle, he started to work rounds. How clever he was! And he went round so fast that he made her feel quite giddy.

The spider somehow seemed to grow bigger and bigger, and his web covered more and more of the window, and was getting as white as snow. Slowly he seemed to change, until he was no longer a spider, but a trow, a queer little man with a face like a rusy,

dried-up apple. And the trow nodded his head at her, and said in a tiny voice: "Watch me, Grete, and you will know how to knit."

Yes, when she looked harder it was wool he was spinning, white and soft and fine; and the web—no, the knitting, of course, grew apace under his quick fingers. Why, it seemed quite easy to see how such beautiful patterns could be made. She was learning how to do it fast, and the little trow turned every now and then, and smiled and nodded. The door opened. So did Grete's eyes. And now there was only a real spider, with an everyday sort of web, and, it was very odd, he was no longer at work, but was

bundles, so that she might start carding and spinning it at once. It would not spin fine enough to please her the first day; no, nor the second day, but she persevered until she was satisfied; and as her wheel went whirring round, she fancied she heard the trow's voice saying: "Try again, Grete. Try again." She thought he was helping her all the time, for surely never had wool been spun of such fineness and evenness before. Then, too, the spider's web was there; and she had only to look at the window, and the pattern seemed to stand out clearly again.

Before long, the neighbors came to see the wonderful shawl that looked like lace. The fame of it even reached a great lady



A SHETLAND WOMAN KNITTING A SHAWL BY THE WAYSIDE

This picture is from a photograph by Charles Reid, Wick

all tucked up into a ball against the ledge because he was too disgusted at the little beads of spray that were hanging on his web to go on with making it.

"Eh, mother," Grete cried, "you have frightened away the trow just as I was getting on so grandly with learning the fine knitting."

"What has the wee wifie been dreaming about?" said her mother. "Oh, I am tired!" And she sat down, not noticing in her fatigue that Grete did not answer. The little girl could not explain just then, and felt she wanted to think it over before she forgot the wonderful pattern.

She dreamed about it all night, and next morning her mother helped her to pick out all the whitest wool from the

in Lerwick, who sent a messenger to bring it for her to see. Grete was sorry to part with her treasure, but her mother said it was a great honor for them, so it was borne away to Lerwick.

Then, one fine day, Grete saw a white sail making for the voc. Soon a lady was sitting beside her, and asking her about her work so kindly that she quite forgot to be frightened. And when the lady left she gave Grete a gold piece for the shawl, the first gold piece that had ever been seen on the island. Everybody wanted to learn how to get gold pieces, and Grete was delighted to teach them. So better days came, not only for Grete and her mother, not only for their own little island, but for all the islands near.

THE TALE OF JENNY MARTIN

JENNY MARTIN was the daughter of a poor woodcutter in the New Forest, in the south of England. One midsummer eve she was wandering about the forest, gathering flowers, when she saw a little white mouse sleeping on some moss beneath a great oak-tree.

"Oh, what a pretty white mouse!" said Jenny. "I will take it home."

She took the mouse in her hands, and it woke up and said:

"No, Jenny, do not take me to your father's cottage, or the cat may get at me and kill me. Leave me here. I am the Queen of the Mice, and I will reward you for your kindness."

"What will you give me, then?" said Jenny.

"Anything that you like to ask for," said the little white mouse. "You have only to come to this tree and tap three times, and I will grant you what you wish."

"Well, to begin with," said Jenny, "I should like my father's cottage to be changed into a pretty farmhouse."

"That I have done," said the mouse, "as you will see when you return home."

Jenny put the little white mouse back on the moss beneath the oak-tree, and ran home. In the place of the small, shabby cottage which she had left a few hours before, there stood a pretty farmhouse with an orchard full of large fruit-trees, a stable with three horses, and a cow-shed with thirty cows; and there were plenty of ducks, geese, and chickens in the yard. Oh, how happy Jenny was, and how amazed was her father, the poor woodcutter, when he saw what had occurred!

A manly young farmer who had always been in love with Jenny came that evening to ask her to marry him. But Jenny was now proud and disdainful, and she dismissed her old sweetheart. She began to feel sorry that she had not asked the Queen of the Mice for something more than a farmhouse. So she went to the tree, tapped three times, and said:

"Little white mouse! Little white mouse! Jenny is tapping outside your house."

The little mouse peeped out and said:

"Well, what do you want now, Jenny?"

"The farm is too small and dirty," said the girl. "I should like a fine, handsomely furnished manor-house with a crowd of servants, a coffer full of gold, and a heap of rich, beautiful dresses."

"Return home," said the mouse, "and there you will find all that you desire."

Jenny thus became a rich young lady, and as she was pretty, as well as rich, the squire's son came to woo her, and all the neighbors looked forward to their marriage. But no marriage took place, for Jenny grew proud and disdainful.

"No squire's son for me!" she said.

"I will get a castle and marry a lord."

So she went to the oak-tree and tapped three times, and said:

"Little white mouse! Little white mouse! Jenny is tapping outside your house."

"Dear me! Dear me! Whatever do you want now?"

"I want to be a lady," said Jenny, "and live in a great castle."

"Very well," said the little white mouse. "Go home, and you will find all that you desire."

So Jenny became a great lady, and a duke came and made a proposal of marriage to her. But Jenny was still proud and disdainful.

"A duchess?" she said. "I do not care to be a mere duchess; I must be a queen."

When she asked the little white mouse to change her castle into a royal palace, and make her a queen, the little white mouse said:

"Take care, Jenny, take care! You are getting very proud and disdainful. But go home, and, for the last time, you will there find all that you desire."

That very day the young and handsome King of England came to the New Forest to hunt.

As he was chasing the deer, he saw a magnificent palace gleaming between the trees. He rode up to look at it just as Jenny returned from her visit to the little white mouse. The woodcutter's daughter was now clad in rich, trailing robes of marvelous colours. She no longer appeared merely a pretty girl, but a very stately and beautiful lady. The king fell in love with her at first sight, and asked her to be his queen.

Jenny was at last pleased and contented with her wonderful good fortune. As she watched the preparation which was being made for her marriage with the king, she thought there was nothing left on earth for her to desire. Every day her royal lover came to her palace with

splendid gifts; she had great ladies to wait upon her, and great lords to attend to her orders, and triumphal arches connected by festoons of foliage and flowers were erected all along the road from the New Forest to the City of Westminster, where the wedding was to take place. But as Jenny was about to enter into the royal state carriage she said to the king:

"I have forgotten something. Wait a minute while I go into the forest."

The vast crowd of courtiers and knights and men-at-arms made way for her, and

become a sweeter and more dutiful girl before you get one. Go home, and profit by the lesson that is awaiting you there."

Jenny went back through the forest in a state of strange fear, for, as she looked at her dress, she saw that it had changed from a queenly raiment into the poor, plain attire of a peasant girl. The palace had disappeared, and the king and the multitude of lords and great ladies and glittering soldiers were gone. Only her father's humble cottage now stood beneath the trees, and, strange to say, when the woodcutter came home late that



THE KING FELL IN LOVE WITH JENNY AT FIRST SIGHT, AND ASKED HER TO BE HIS QUEEN

pulling up her long robe, she ran to the oak-tree, and tapped impatiently three times, and said in a commanding voice:

"Little white mouse! Little white mouse!

The Queen of England has come to your house."

"Well, Jenny Martin," said the little white mouse in a severe tone, "are you still not satisfied with all the wonderful things that I've done for you?"

"I want only one thing more," said Jenny. "When I am married I want my husband to give way to me in everything. Then I shall be ruler of England."

"You have no husband yet," said the white mouse, "and you will have to

evening to supper, he spoke as though nothing marvelous had ever occurred.

"Was it only a dream?" Jenny kept saying to herself when she found that none of the neighbors laughed at her.

No doubt the kindly little mouse made it all appear to be only a dream in order to lighten Jenny's punishment. But Jenny learned the lesson. She became a sweet, contented, industrious girl, and the manly young farmer who had always loved her came and married her, and she lived more happily with him on that quiet little farm than she would ever have done on a high and glittering throne in a palace surrounded by courtiers.

EYES FRONT

BOB FRASER had a contract to supply a Coeur d'Alene silver mine in Idaho with cord wood that winter. At first, he tried living in camp and journeying out to the wooded slopes of the Sawtooth Mountains every morning, but the winter days were short and time very precious, so he built himself a log shack in the valley immediately below where he was cutting. Thence it was an easy matter for a good skier to journey every day to his work, and when he needed stores he could go into the mining village.

The snow lay deep and firmly packed on the steep slopes and Bob enjoyed his skiing in the crisp air. Each night as he finished work he wiped the blade of his axe and stuck it into the trunk of a tree ready for use the next morning. Because of the severity of the winter, game was scarce: the deer and elk had gone into lower country, and the few predatory animals of the region were very hungry--the only time when they are likely to be dangerous to man. Bob, as a good woodsman, was aware of this, but as the days passed and he saw and heard nothing he relaxed his vigilance and left his rifle in the shack.

One morning, after an invigorating climb and run, he reached the place where he had left his axe the night before. As he topped the rise he saw a furry form between him and the tree where it stuck. A mountain lion--and a big one, but lean and hungry looking. Bob gave a shout and advanced, expecting the animal would retire as soon as he saw him. But it stayed, crouching--its yellow eyes blazing--and Bob saw that it was slowly lashing its tail, sure sign that it meant to spring. He measured the distance between himself and his axe, and in the brief time that he looked away the cougar crept nearer. It became evident that he could not afford to take his eyes off those blazing yellow ones. The rifle and the shack were way down the hill, and there was no way for the woodsman to reach them but by backing in his trail. It was his one chance, however, and he determined to risk it. He slowly backed, and at his first movement the muscles on the creature's shoulders rippled, and he crept slowly after the man. Step by step and yard by yard,

the cougar creeping after him, Bob backed along the trail as it twisted and turned on its downward grade. None but an expert could have performed such a feat, and Bob had not even a ski-pole to help him. Each time before shifting his weight he tested the tenuous grip of the skis upon the trail. He dared not look behind him, he could not even look down. He tried it once, and the lion gained several feet, during the few seconds his eyes were turned away.

As he backed yard by yard nearer the cabin, through wooded hollows and over little ridges, such thoughts as he could spare from his immediate difficulties and the compelling glare of those wicked eyes, were busy with a new problem. All around his cabin the snow lay deep, ten feet and more. He had kept a clear cutting immediately round the cabin and a path through to the creek. But there was only one place where he had piled up steps against the snow wall. If he missed the steps, the cougar could spring full upon him.

When he knew that he was very close to the cabin he shot one flashing glance over his shoulder. In that time the cougar, getting anxious lest his prey escape him, by a short bound placed himself within easy leaping distance. Quickly Bob shuffled his feet out of the ski straps and then with desperate impetus flung himself down the snow slope, and fell through the door of the cabin. Immediately, he was on his feet, his back to the door to meet the heavy impact of the cougar's spring. There was a strong bolt, and exerting all his strength, he shot it, and reached for his rifle. The cougar crept around the cabin to find another entrance. Bob had guessed that he would do this, and, as the beast passed the back, he fired through the window. It was only a ten yard range and the ball struck fair between the eyes. One leap into the air, one tremor through the lithe form and the beast lay still, its days of slow starvation ended. The hide was seven feet long when Bob had stretched and cured it. It would have brought him a good price but he refused to sell it. He never went to or from his work again without his axe or his rifle on his shoulder.

WHEN BETTY LOST HER WAY

BETTY at first thought she was still dreaming. She had cried herself to sleep among the ferns under an oak-tree, but the sound of music had awakened her.

She wiped the tears from her eyes with her pinafore, so that she could see more clearly. The moon had risen, white and large, behind the great pines in the middle of the wood, and there, in the moonshine, was a band of little gray mice, dancing and singing round the stump of a tree.

On the tree-stump stood a funny elf with a solemn face, playing music on a big fiddle, and three pretty fairies sat on the grass, watching the dancers.

Betty crept nearer and nearer, until she was able to hear that the mice were singing:

"All the corn is a golden brown
Harvest home! Get the harvest home!
Apple and nut are tumbling down,
As we sing harvest home!"

"Hurry up, farmer, and cut the wheat.
Harvest home! Get the harvest home!
Thresh out the grain for us to eat,
As we sing harvest home!"

"'Corn,' says the farmer, 'is my own
consarn.'
Harvest home! Get the harvest home!
But the wise little mouse knows the way to
the barn,
As we sing harvest home!"

Then a mouse saw Betty, and gave a shriek, and away scuttled all the dancers. But the tallest of the fairies—a beautiful lady with lovely lilac wings and long, flowing lilac robes—called the mice around her, and looked sternly at the little girl.

"How dare you disturb my mice when they are holding their harvest festival!" she cried. "How is it you are not in bed, Betty, when all the world is fast asleep?"

"Please, fairy, it's my birthday," said Betty, beginning to cry. "We were having a party at the farm, and some of the children were late. Daddy went to fetch them, and I—and I—"

"Never mind, Betty," said the Fairy Queen, taking the little girl in her arms. "You shall have a special birthday party here in the woods. Play the dance to fairyland, Grimken."

Looking more solemn than ever, the elf

put his chin on the top of his big fiddle, and waved his bow three times in the air, and began to play a swift, merry dance. There was a rustle of wings, and for a moment the moon was hid by lovely fairy forms. Then down they flew to the tree-stump and clustered round their queen.

"Prepare a birthday feast for Betty of Westermain Farm!" cried the Fairy Queen. "She is five years old this very day, and has lost herself in our woods."

Away went all the fairies, and the little mice began to dance with joy. Holding each other's front paws, they circled round Betty, singing:

"Pretty little Betty is kind and sweet,
Pretty little Betty will do no harm
To the tiny gray mice with nimble feet
That live with her on her father's farm."

"Do they really?" said Betty.

"Yes," replied the Fairy Queen. "But there are only thirty-two of them, so they don't take much of your father's corn."

By this time the banquet had been prepared, and a rich and glorious banquet it was—hundreds of new sorts of cakes, and puddings and tarts, and sweets of every kind. Everything was served up on gold plates, and a bright-winged fairy brought Betty a golden goblet, and poured out a delicious fairy drink for her. Rows of tables, on which was placed all manner of exquisite fruit, were set on the grass, and a band of goblins played lilting tunes during the feast.

At last the feast was over, and the dancing began. The Fairy Queen took Betty as partner, and it was wonderful how quickly the little girl learned all the steps of the wild and maddening fairy dances. Round and round they whirled on the greensward. Suddenly a cock crowed in Westermain Farm, on the northern side of the wood.

"Quick, we have not a moment to lose!" cried the Fairy Queen, touching Betty with a little wand.

Betty swayed and fell asleep in the Fairy Queen's arms. When she woke up she found herself lying, with her clothes on, in her own little bed in the farm. Her father and mother, who had been searching for her all night, still think she managed to find her own way home.

STORIES TOLD IN INDIA 3,000 YEARS AGO

These little stories were told to the boys and girls of India a thousand years before Jesus Christ was born, but they are still as interesting as when they were originally told to the children of long ago. They were first told in Sanskrit, the sacred language of the people of India.

THE TIGER AND THE TRAVELER

A TIGER who was too old to go hunting for his food lay hidden in the jungle, crying to the passers-by to come and receive a handsome bangle for nothing. A covetous fellow, hearing the invitation, asked to see the bangle, and the tiger pushed one of his paws a little way through the grass and showed the stripe upon it. Thereupon the covetous man started to get it, but soon found himself up to his waist in a pool of mud.

"One moment," said the tiger, "and I will come and help you out."

And, going into the pool, he seized the man and made a hearty meal of him.

Covetousness often leads a man into trouble and disaster.

THE APE AND THE WEDGE

IN Behar, a great temple was being built, and a carpenter who had partly sawed through a huge beam of wood went away to dinner, leaving a wedge in the beam to prevent the two sawed parts from springing together. While the man was away, a party of monkeys came along, and one of these, thinking to appear clever before his companions, said:

"See me take the wedge out of this beam and give the carpenter more work to do!"

Then he jumped down into the opening in the beam, and tugged away at the wedge, until at last it came out, and at the same moment the sections of the beam sprang together and held the monkey fast until the carpenter returned.

Those who make trouble for others often fall into it themselves.

THE BRAHMAN AND THE GOAT

A BRAHMAN who lived in the forest had been to the town to buy a goat for sacrifice, and was returning with it on his shoulders, when he was seen by three rogues, who determined to obtain his goat.

They ran ahead of him and seated themselves at the foot of three different trees.

"Why do you carry that dog, master?" said the first, with well-feigned surprise. The dog, it must be understood, is regarded as an unclean animal by the Brahmans.

"Dog!" was the indignant reply. "It is no dog at all, but a goat."

The Brahman came to the second rogue, who made the same remark. This time the Brahman took the goat from his shoulder, looked well at it, and, replacing it, proceeded on his journey.

But when still a third man said the goat was a dog, the Brahman doubted the evidence of his own eyes, threw down the animal, washed himself from the pollution of the supposed dog, and hurried off home. The three rogues then seized their prey, and cooked and ate it.

Be on your guard against rogues.

THE BRAHMAN AND THE POTS

A BRAHMAN went to rest in a potter's workshop, taking with him his staff, and a little dish containing some meal that had been given to him. As he lay upon the ground he began to meditate.

"If I sell this meal," he said, "I can buy some of these pots with the proceeds. Then I can sell those and make a profit, and with the money I can buy clothes to sell. And so, in time, I shall be worth many thousands of rupees. Then I shall buy a house and marry, and if my wives quarrel I shall take up my stick—like this, and punish them—thus."

As he thought these things he waved his staff, smashed his own dish, upset the meal in the dirt and dust, and broke many of the potter's vessels. So ended his wonderful castles built in the air.

Do not count your chickens before they are hatched.

THE LION AND THE CAT

AWAY in the mountains of the north of India lived a lion, who was much annoyed by a small mouse that crept out while he was asleep and gnawed his mane. At last the lion went to the village and obtained a cat, promising to treat it royally if it would keep the mouse away.

This the cat did for a time, and the lion always gave his protector the best of food. But one day, when the mouse was very hungry, it came out and was killed by the cat. The lion soon found that there was no longer any mouse to annoy him, and he at once ceased supplying the cat with food, and the cat had to return to the village and live as poorly as it had done before.

The great are often selfish in their patronage of those who help them.

THE PEASANT AND THE THREE ROBBERS

A PEASANT was one day traveling to market upon his donkey, taking with him a goat that followed behind, and was attached by a rope to the saddle of the ass. As the man went along the road, three cunning robbers saw him.

"Here comes a fine fish for our net," said one. "I am going to take his goat without the simple fellow knowing it."

"And I," said another of the thieves, "will do something cleverer than that. I will take his donkey with his permission, and he shall thank me sincerely for doing so."

"Ah!" said the third robber. "I will beat you both, for I will have the very coat off his back; and while he takes it off to give to me, he shall call me his friend and benefactor."

"Come along," said all three at once.

The first robber went up quietly behind the unsuspecting peasant, removed a bell that was tied to the goat's neck, and fastened it to the donkey's tail, so that it might continue to tinkle and the poor man might think his goat was still following. The thief then loosed the rope from the goat's neck

and made off with the animal. After a time the peasant happened to look round, and was amazed to find that, though the bell still tinkled, the goat had disappeared. He ran hither and thither, but could see no trace of his goat. Just then the second robber approached, and, on being questioned, replied:

"I saw a man running in that direction with a goat, and I'll be bound to say it was yours. I will mind your donkey, if you like, while you give chase."

The peasant thanked the thief profusely and ran off, leaving his donkey with the rascal, who soon rode away upon its back.

The poor countryman, of course, found no trace of his goat, and soon returned, only to discover that his ass had

disappeared too. He was very angry with the men who had robbed him, and not less angry with himself for being duped.

"Well," said he, "the next man who tries to impose upon me will have to be very clever. I am on my guard now."

At this moment he heard a series of dismal groans, and, going to the spot whence they proceeded, he found a man weeping bitterly and sitting upon the ground near a well, in the greatest distress. It was the third robber.

"Why are you making this noise?" said the peasant. "Do you think you are the only man in trouble? I am on my way to market, and have just been robbed of both goat and donkey."

"Pooh!" replied the other. "That is nothing. I was carrying a casket of the richest jewels, and was resting by

this well, when by accident I let the treasure fall in, and there it lies at the bottom, quite out of reach."

The peasant looked into the well, but it was too dark to see anything at all.

"Why do you not dive in and recover your treasure?" said he.

"Alas!" replied the robber, groaning, "I cannot swim or dive; but if only I could

find someone who would dive in for me and get the casket, I would reward him with half its contents."

"Would you, indeed?" said the peasant. "Then I will dive in and get it for you."

The groaning man appeared delighted.

"You shall certainly have half of the jewels," he said, whereupon the peasant thanked him as the benefactor who would more than replace the loss of the goat and the ass.

Taking off his coat, the peasant dived in, but, of course, there was no treasure in the well; and when, after hunting for a long time in the water, he came out greatly disappointed, to say that he was quite unable to find the treasure, he found that the third robber had made off with his coat.



THE FIRST ROBBER TIED THE BELL TO THE TAIL

THE NEXT STORIES ARE ON PAGE 6101.

The Book of THE UNITED STATES



A Scout is a Cheerful Companion.

BOY SCOUTS OF AMERICA

A ROY is the most loyal being in the world. Undirected, his excess of animal spirits and sociability sometimes drive him into undesirable lines. He becomes the member of a "crowd" or "gang" and his very staunchness and unswerving loyalty to boyhood's unwritten law, that requires him to stick by a comrade even when it leads him into a row, becomes a peril to the community.

Yet this sense of clannishness and high spirits, when properly directed, becomes a firm foundation for vigor and manliness of character. The energy which often results in lawlessness, perhaps in injury to members of an opposing "club," perhaps in destruction to property, can be turned into a force which helps the neighborhood in which boys live, instead of keeping it in constant uproar.

Workers with boys have learned this fact. The day of suppression and of repression is past. Expression—wholesome, intelligent expression—is the motto of the age. If you would make men you must teach the boys to make themselves.

THE SONS OF DANIEL BOONE— THE FIRST STEP

Many years ago, Dan Beard, the artist, was walking down a street in

Copyright, 1911, 1918, by M. Perry Mills

CONTINUED FROM 6075

New York City when he was struck by the fact that nine-tenths of the boys he saw did not know how to properly spin a top or to play marbles skilfully. He investigated further and found that practically none knew how to make a kite that would fly or a balloon that would ascend.

"Our boys must be taught how to use their brains and fingers," he thought, and he set out to remedy the evil by writing books to teach boys handicraft and woodcraft. Later he organized out-of-door societies under the name of "The Sons of Daniel Boone," which was later changed to the "Boy Pioneers of America," and so the germ of the Scout idea was set adrift in our country.

THE WOODCRAFT INDIANS COME NEXT

In the meanwhile, Ernest Thompson-Seton, author and illustrator of such well-known nature books as "Wild Animals I have Known" and "The Autobiography of a Grizzly," was working out a similar idea along independent lines. Greatly impressed by the number of "flat-chested cigarette smokers with shaky nerves and doubtful vitality" that he found among our boys, he determined to counteract this degeneracy by substituting out-of-

door clubs and athletics for tobacco and alcohol

THE "WILD CAT BAND" OF SETON INDIANS

He began his boy work in 1898. In 1902 he had several woodcraft societies going, but it was not until 1903, when he paid a visit to a friend in New England, that his real movement was set on foot. His friend had purchased several hundred acres of abandoned land, and was turning it into a beautiful country estate. Mr. Seton found that the neighborhood boys deeply resented the intrusion of a stranger on what they considered their property and were doing all in their power to drive him out of the place. They destroyed fences, pelted sign-boards until they were tipsy, and covered the gates of the park with hideous paintings. Mr. Seton thought about the matter. He had his theories upon boy nature. With his friend's permission he gathered together a lot of tents, canoes and food, and made a camp on the shores of the little lake in the park. Then he quietly invited the boys of the near-by village to become his friend's guests for a few days' camping. They responded—at first half suspiciously and then with a turbulent outburst of animal spirits that made Mr. Seton's heart sink with inward misgiving. But he let them work off their excess of vitality, and after stuffing them with a dinner such as they had never had before, he gathered them around the camp-fire, and told them thrilling stories of heroism and bravery; ending all with the tale of Uncas, the Last of the Mohicans.

Then in the breathless pause that followed, he remarked, reflectively, "Say, fellows, how are we going to do this camping out, just tumble around any old way, or real Indian fashion?"

"Oh, Injun, bet your life!" came the enthusiastic response.

Tactfully bringing all his knowledge of boy nature to bear on the task before him, Mr. Seton led them on step by step until that very night he accomplished his purpose and the "Wild Cat Band" of Woodcraft Indians was formed. The idea worked splendidly, for the erstwhile bandits of his friend's park slowly grew into a guard of staunch supporters. Moreover they were the nucleus of many societies of boys that formed in tribes under the name of the "Seton Indians."

Mr. Seton's chief and most valuable

contribution to the scout movement consisted in the substitution of the honor idea for the competitive system, which by urging boys on beyond their strength had worked much harm in athletics.

THE BOY SCOUTS OF GREAT BRITAIN ARE ORGANIZED

In 1904, Mr. Seton went to England to give public and private addresses upon woodcraft for boys. In 1906, he was joined in the work by Lieutenant-General Baden-Powell of the British Army. General Baden-Powell remembered how in the siege of Mafeking in the Boer War, when all the men had been needed on the firing line, the boys had been formed into little bands of messengers and had carried dispatches from fort to fort, and when the war was over had proudly received their medals with the grown-up soldiers. General Baden-Powell believed that the boys could be used successfully in times of peace as well as in war. He took Mr. Beard's Scout idea and combined it with Mr. Seton's Woodcraft Indian plan and in 1908 he set on foot the boy scout movement of Great Britain.

General Powell gathered together a handful of English boys in Surrey. He gave them a little talk, such as had been given to the boy scouts of Mafeking, he put them in uniform and drilled them a little. Then he set them to playing at Indians and Knights of King Arthur, publishing a little booklet entitled *Scouting for Boys*. The idea spread until now in Great Britain boy scouts can be seen everywhere—"in the slums of East London, in the loneliest country parishes, in towns and hamlets from Land's End to John O'Groat's."

THE IDEA OF SERVICE HELD UP TO THE SCOUT

"Whenever anything happens—when there is a railway accident, a horse runs away, a house catches fire, or a man falls in the river, boy scouts seem to appear on the scene as if by magic, to make themselves useful in any and every way. How useful it may be to have on hand a trained and disciplined force of quick, intelligent boys in every emergency was seen at the time of a terrible railway accident on the London to Brighton railway. The local scouts, who were playing football, when they heard of the accident, rushed to the scene with their ambulance stretcher and for many hours calmly and promptly performed noble and terrible

BOY SCOUTS ON THE ROAD AND IN CAMP



This picture shows a troop of Boy Scouts on a hike to its camping grounds with tent and supplies in the trek cart. The other scouts on bicycles and on foot bring up the rear. Such a troop consists of twenty-four to thirty-two scouts, divided into three or four patrols of eight scouts each, each having its own leader, and the whole troop being under an adult scoutmaster with one or two assistants over eighteen years old.



This picture shows a kitchen squad at a scout camp and rally. Each first-class scout is able to prepare a meal in a manner that is often of great assistance to Mother. There is one troop that can break ground at a new camping place and have tents up and fire built and everything in order, and can produce a pan of smoking popovers within twenty-eight minutes of the arrival of the troop on the camping ground.

duties of rescue among the killed and wounded, giving most valuable help to doctors, public and railway servants."

It is this idea of service—of doing something for somebody every day—which was added to the scout idea by General Baden-Powell, and which immediately brought the movement to the attention of boy workers and has done so much to give it wide popularity.

THE BOY SCOUTS OF AMERICA

In America the Scout movement was not legally incorporated until February 8, 1910. Since then it has progressed rapidly until now there are hundreds of thousands of boy scouts in the United States, with many thousand leaders of troops called Scout Masters. Bands of boy scouts can be found in every state in the Union, in Panama, in Cuba, in Hawaii, in the Philippines. The movement swept over the country with an enthusiasm and impetus even greater than in England. In fact, as General Baden-Powell stated at a dinner given him at the Waldorf Astoria, the vast stretches of territory, woods and streams—ideal camping grounds—give the movement a greater future in America than even England can ever hope for. Yet, wherever the movement spreads, it is "the magician's wand that turns boys into upright, honorable, chivalrous, kindly, self-reliant, useful and patriotic men."

These words were spoken several years ago, and since that time, the boy scouts have proved again and again what fine work well-organized, disciplined bands of boys can do. They have not in this country been called upon to patrol roads and guard bridges, as they have in England, but they have done other things of equal value. Their work, for instance, in promoting the Liberty Loans has been almost beyond praise. They have been instrumental in gaining very large sums in subscriptions for the loan. The modest, manly bearing of the boys who did the work, and their eagerness to give their playtime to patriotic service, showed the value of their scout training.

In the summer of 1916, when it was seen that large supplies of food were needed in Europe, many boy scouts devoted a large part of their vacation to gardening, to picking berries and other fruit, and in other ways aided in the production and preservation of food.

THE SCOUT LAW, WHICH EVERY ONE MUST KNOW

On the Scout Law, which every boy must know by heart before he can become even a tenderfoot—the lowest grade of scout—hangs the whole glory of the scout idea.

The Scout Law in its present form says:

1. A Scout is trustworthy.

A scout's honor is to be trusted. If he were to violate his honor by telling a lie, or by cheating, or by not doing exactly a given task, when trusted on his honor, he may be directed to hand over his scout badge.

2. A Scout is loyal.

He is loyal to all to whom loyalty is due: his scout leader, his home, and parents and country.

3. A Scout is helpful.

He must be prepared at any time to save life, help injured persons, and share the home duties. He must do at least one good turn to somebody every day.

4. A Scout is friendly.

He is a friend to all and a brother to every other scout.

5. A Scout is courteous.

He is polite to all, especially to women, children, old people and the weak and helpless. He must not take pay for being helpful or courteous.

6. A Scout is kind.

He is a friend to animals. He will not kill nor hurt any living creature needlessly, but will strive to save and protect all harmless life.

7. A Scout is obedient.

He obeys his parents, scout master, patrol leader, and all other duly constituted authorities.

8. A Scout is cheerful.

He smiles whenever he can. His obedience to orders is prompt and cheery. He never shirks nor grumbles at hardships.

9. A Scout is thrifty.

He does not wantonly destroy property. He works faithfully, wastes nothing, and makes the best use of his opportunities. He saves his money so that he may pay his own way, be generous to

MAKING AND BREAKING CAMP



The three hundred thousand and more members of the Boy Scouts of America try each year to have a few weeks of life outdoors, where they learn many practical things—such as first aid and life saving, cooking, swimming, a knowledge of animals and trees and flowers and the stars, and, best of all, the spirit of self-reliance. Here we see the scouts ready to make camp, and doing quick work on their tents.



In this picture the scouts are striking their tent after a camp at their summer farm. Scouting teaches boys the value of team work, and does not permit of shirking. Each scout must pass certain tests in practical knowledge and be ready at all times to do his part in the application of it. The boys in camp are taught to guard their health carefully, and the scout camp is always marked by careful scouting arrangements.

those in need, and helpful to worthy objects.

He may work for pay, but must not receive tips for courtesies or good turns.

10. A Scout is brave.

He has the courage to face danger in spite of fear, and to stand up for the right against the coaxings of friends or the jeers or threats of enemies, and defeat does not down him.

11. A Scout is clean.

He keeps clean in body and thought, stands for clean speech, clean sport, clean habits, and travels with a clean crowd.

12. A Scout is reverent.

He is reverent toward God. He is faithful in his religious duties, and respects the convictions of others in matters of custom and religion.

THE SCOUT OATH PROMISES DUTY TO GOD AND COUNTRY

Before he becomes a scout a boy must promise:

On my honor I will do my best—

1. To do my duty to God and my country, and to obey the scout law;
2. To help other people at all times;
3. To keep myself physically strong, mentally awake, and morally straight.

And he raises his right hand level with his shoulder, palm to the front, thumb resting on the nail of the little finger and the other three fingers pointing upward, to make the Scout Salute.

Before he became a tenderfoot he was taught the meaning of the scout oath, how to make sailors' knots, and learned the composition of the national flag and the right way to fly it. Once he has passed his test as a tenderfoot and has assumed the picturesque uniform for which his boy heart has been yearning, there are other interesting duties into which he is initiated. He learns first to give aid to the injured, to signal by means of the Morse alphabet or semaphore; to run half a mile in twelve minutes at scout's pace; to use properly knife or hatchet; to lay and light a fire in the open with not more than two matches; to cook a quarter of a pound of meat and two potatoes without cooking utensils; earn and deposit at least one dollar in a public bank; and to know the sixteen points of the compass. Furthermore to

qualify as a second-class scout he must be able to track half a mile in twenty-five minutes or to describe the contents of a store window from memory. Before he can become a first-class scout there are other heights of scoutcraft to climb, all full of fascination to an active, healthy-minded boy.

And so the boys, bit by bit, learn endurance, self-reliance and self-control; they learn the secrets of the woods and fields and become possessed with an earnest, manly desire to be of service to some fellow human being every day. They are given a purpose in life.

AIM OF THE MOVEMENT—TO MAKE MANLY, USEFUL CITIZENS

The Boy Scout movement is not a military organization in any sense of the word—neither is it a church movement. "A scout's religion is his own private business," Mr. Beard said in an interview which he very kindly granted to the writer of this article, "and it is not questioned by his officers or fellow scouts. The aim of the movement is to make honorable, useful, manly American citizens, and to do this without opposition of parents. All debatable ground is carefully avoided." And doing this, have we not laid the firmest foundation for the best and highest in any religion?

THE YOUNG KNIGHT OF THE TWENTIETH CENTURY

As Mr. Blumenfeld so truly says: "All you have to do is to collect, say, a dozen boys, ragamuffins, young ruffians, boys of blue blood and boys of red blood, anything so long as it is a boy, teach him the Scout Law, put him on his honor, stick him into a uniform, and you have at once transformed the urchin into a blazing-eyed young knight errant, a chivalrous, honest, honorable, and zealous patriot." And yet there are people who disapprove of the Boy Scout movement!

As an antidote for idleness and for that aimless activity which so often goes wrong when misdirected, or undirected, the Boy Scout movement is supreme. It furnishes not only wholesome occupations in the outdoor life, but gives the boy fine, high and true things to think about, at the age when he is most easily influenced for good or evil—a benefit which cannot be measured because it is an endless chain, whose first link connects with the family life in the home.

THE NEXT STORY OF THE UNITED STATES IS ON PAGE 6271.

SCOUTS AT WORK AND AT PLAY



The scout games, as well as the scout tests and purposes and spirit, are the same among the millions of scouts in every country. Here we see the boys making a scout pyramid, which is of practical use in wall scaling and for signaling. "A scout is a brother to every other scout" the world over. This great organization of the "boy-power" of the world has become a mighty power for good among the nations.



The Boy Scouts of America have been of great assistance in food growing and saving since the Great War of Nations began. At the request of the food administrator, Mr. Herbert Hoover, thousands of scouts raised war gardens. Hundreds of scouts have worked on farms and helped to harvest crops, as shown in the picture. The Government gave medals to scouts who had their own gardens, and interested others.

ON THE SEASHORE AND IN THE WOODS



Here we see a scoutmaster instructing his troop in coast patrol work. There are seventy-five thousand scouts living near the coast who are ready whenever the Navy Department may call them. In England the Boy Scouts have been of great assistance in watching the coast line. The scouts in America are skilled in signaling, and the patrol organization has been perfected, and can be used by the Government if necessary.



Here we see the scouts preparing a meal in the open field. The boy in the background looks envious. But scouting is not all play, as is shown by the work of this greatest organization in the world for boys, in helping the government in the sale of Liberty Bonds and War Savings Stamps, and as "dispatch bearers," and in many other ways, such as helping other organizations like the Red Cross and the Y. M. C. A.

The Book of GOLDEN DEEDS

WHAT THIS STORY TELLS US

THE stories of the missionaries to the American Indians in the early days are full of examples of bravery, particularly in Canada. The Indians of the colonies to the South did not seem to be so fierce. In another place you may read of some of them. After a long time the Indians learned the power of the white man, and ceased to torture the men who brought them the story of Christianity. The good priest whose story is told below was not so much in danger of his life or of physical torture, but he gave his life to his people, and endured all manner of hardships, in looking after his people. This is a story of heroism shown day by day in doing unpleasant things.

BLACK ROBE AND WHITE HEART

ON New Year's eve, 1839, Albert Lacombe, almost twelve, stood at midnight in the raftered kitchen of his house near St. Sulpice, Quebec. Very proud and very happy was he, for he was to repeat to his father the New Year's wishes that his mother had taught him. This is one of the pretty "habitant" customs that has not died out in French-Canadian homes.

The night air was so frosty and still, that the joyful chimes from the cathedral in Montreal, twenty miles away, blended with the peals from the gray-towered church around which the little parish of St. Sulpice clustered.

The lad's heart was filled with something like awe as he listened and waited for the music of the bells to die away. He noted that the vivid blaze from the wide fireplace, heaped with logs, flamed brightest on his brothers and sisters as they knelt about their father's knee. His mother stood in the deep shadows of the low room; she was thinking, he believed, of her ancestress who many years before had been captured by an Ojibway chief and was rescued by her "voyageur" uncle, who had brought her and her half-breed children back to her childhood's home.

As the chimes rang out the little formal speech was given, and closed

Continued from 5950



with a request for their father's blessing, but to Albert's boyish loyalty, his mother seemed left out. Turning to her, he cried impetuously, "And, Ma-man, you know how we love you!"

This unpremeditated outburst gives us the keynote of Father Lacombe's whole life. He traveled thousands of miles over the great high plains of the Canadian Northwest, over oceans and foreign countries, and always his cry was, to those who were within reach of his voice or influence, were they Indians, metis (half-breed), or white men, "And you know how I love you!"

Albert and his brothers and sisters lived with their father and mother on the farm in St. Sulpice. The boy, when not at school, was kept closely at work on the farm. He enjoyed making sugar when "sugaring off time" followed the snowy winters in Quebec, but picking up stones on new land, feeding pigs, driving a plough,—these were duties not so pleasant, and his thoughts were busy with plans for the future. Should he be a "voyageur" like his grand-uncle, Joseph Lacombe, and go to the far, far West, where the fur companies sent men who were brave? His parents were so poor, that he could not hope for their assistance in gaining an education.

One day a wonderful thing happened. The curé, driving a fat old horse, came to make a call. He spoke of the weather, and of the crops. Suddenly he turned to the shy lad standing near. "My little Indian," he said, for he was fond of Albert, and knew the story of Madame Lacombe's ancestress, "what are you going to do?" Albert was speechless. He knew what he wanted; but how could he tell so grand a man as "Monsieur le Curé?" He looked up desperately at his father. So the kindly father explained that he could not afford to send his eldest child to school, although the boy longed for books and knowledge. The curé nodded, but made no further reference to his question until he was leaving. Then he called back, as he clambered into his old cariole, "You send him to college and I will pay his way. Who knows? Some day our 'little Indian' may be a priest for the Indians."

So for years Albert Lacombe studied. He enjoyed his school, enjoyed his college. But like all real missionaries born, he grew to feel that school life and indoor life were not for him, and when he was twenty-two, he started for the far country he had dreamed of ten years before. Travel was not easy then. His long cassock was often ridiculed, and the long trail from Montreal to Pembina, far out on the northwestern prairies as distances were then reckoned, seemed very long indeed, as it was covered by stage and steamer from Montreal to Buffalo, from Buffalo to Dubuque, Iowa, and from there to St. Paul, Minnesota. On the Mississippi steamer the first free air of the wilderness came to young Lacombe. "I began to breathe freely, at last," he says of those delightful days. "I felt myself a new man."

When he reached St. Paul, the scattered settlement of log houses that had but recently dropped the name of Pig's Eye, he found scant accommodations. His horror at being shown a coffin in which to sleep was genuine, but "It's much better than the floor," the frontier priest remarked. "We made it too short for one of my parishioners; but even so, it serves a good purpose."

From St. Paul on, the trail was harder and lonelier. The oxen drawing the creaking wooden carts moved slowly along the muddy roads. The marshes and creeks were swollen by the recent

rains, and sometimes the carts and oxen sank so deep in a swamp that the whole party had to work in harness to drag them out. Pembina was reached at last and there began Father Lacombe's years of service to the Indians and metis. He learned many Indian languages, went with the Indians on their annual buffalo hunts, when the unnumbered bison roaming the prairies looked like the type on this page, so closely did they feed, taught the children, baptized all who would, worked and loved. That was the Golden Age for the Indians, for the bison supplied them with three great necessities of life, food and clothing and fuel, and they were brave and independent and free.

Finally the missionary was sent further west. From St. Boniface and Fort Garry to Edmonton House, then the most important trading post of the Hudson's Bay Company west of Fort Garry, he traveled by way of Cumberland House. From there, ten York boats conveyed the party up the Saskatchewan. Alas, Father Lacombe's dreams of the free life of the "voyageur" were not borne out by the reality of their tasks. Canoes had been done away with, and men hauled the heavy boats against the current as horses hauled the boats on the Erie Canal. Walking in mud, over rocks, through swamps, along cliffs, sometimes in water up to their arm-pits,—small wonder the men were glad when they neared Edmonton House. Then they donned fresh red woolen shirts and knotted kerchiefs around their heads to make a brave appearance as they climbed the green banks of Saskatchewan to the palisade-hid fort, trading post, storehouses and the deep roof of "Rowand's Foli," as the governor's house was called. The flag-pole even was invisible; but the red flag bearing the well-known H. B. C. shook in vehement welcome as the western breeze blew over the ravine.

When the Blackfeet, Blood, Piegan, Strongwood and Plains Crees came to trade in spring and autumn at Edmonton House, Father Lacombe welcomed their coming as another opportunity to get acquainted with more Indians. He watched with interest as the men rode up, wearing skin shields on their arms, full quivers at their sides, eagle-feathers in their hair, and startlingly bright paint on their supple, half-naked bodies.

Squaws and children, yelping dogs and clanging iron kettles added color and noise as they followed the ponies that drew the travois, or Indian wagon, formed of crossed poles on which were piled the camp equipment.

While the men traded their furs and skins for the things they wanted, the squaws put up the lodges and made the camp. Soon every Indian, big or little, knew and loved Father Lacombe.

On and still further on he traveled. He went to Peace River, Little Slave and Lesser Slave Lakes. He went to Jasper House, where Father De Smet, who brought the story of the cross to the Flat-head Indians in Montana in 1840, had gone in 1845-6 as peacemaker. It is at this place where the Athabasca River pours out from the Rocky Mountains, heading deep within their mighty gorges and ravines. Sometimes he was in forest fires, in floods, in blizzards. He wandered on foot, by boat, by pony or dog-team, even on snow-shoes, and everywhere he went he was cheerful, sunny and hopeful.

When smallpox and scarlet fever came among the Indians, there too was Father Lacombe, with medicine and advice, no matter how far away he might have been at the time of the outbreak. When a tribe of Crees attacked a tribe of Blackfeet with whom he was camping, he went around the outside of the palisade, holding his crucifix aloft and waving a red and white flag in an appeal for peace. In the noise of the battle the Crees did not hear him and a low-lying fog shut him out of their vision. He called to the unseen enemy, he waved his flag, but his efforts were unavailing. Suddenly a bullet, which had already touched the earth, rebounded to his shoulder and, glancing off, struck his forehead. The wound was slight, but the shock was so great that he staggered and fell. The Blackfeet, angered afresh, set up a wild shout, "You have wounded your Blackrobe, Dogs! Have you not done enough?" When the startling word ran through the ranks of the Crees, the firing ceased, and without waiting to meet their friend, the Man-of-the-Good-Heart, the Crees withdrew in confusion.

And so the years went on. The Northwest Mounted Police took charge of the country west of Winnipeg. The settlers came. Cattle, horses, and wheat fields increased. Railroads crossed the country

the missionary had so often traversed. The fur trade diminished, and the buffalo vanished. The metis and Indians, who tried farming with poor success, were starving. Meanwhile towns multiplied. Father Lacombe's Indians sorely needed his love and aid. He had known them brave and powerful, honorable and hospitable—now they were degraded dependents. Where had the wilderness gone?

There are but few places in Canada, England, and even on the Continent, to which Father Lacombe did not go to gather money and get grants of land for his poor Indians and metis. Queens, diplomats, emperors, even the Pope himself, were interviewed, and never without instant response. His good works are so well known that one time at a banquet a toast was given in which he was compared to a carriage that, long ago, used to wend its way from one end of Rome to the other, and in which any one who was in trouble might take refuge, whether they were innocent or guilty. The toast concluded with the words, "He lends himself to all, for all."

As the years slipped by Father Lacombe finally settled down, at eighty-six, in a "Home," near Calgary which he had founded for the homeless children and homeless poor who might be stranded as the tidal wave of immigration swept over the plains he loved so well. His Indian friends were practically all dead. Yet his great heart had to find some one to father, some one who needed him, some one to love.

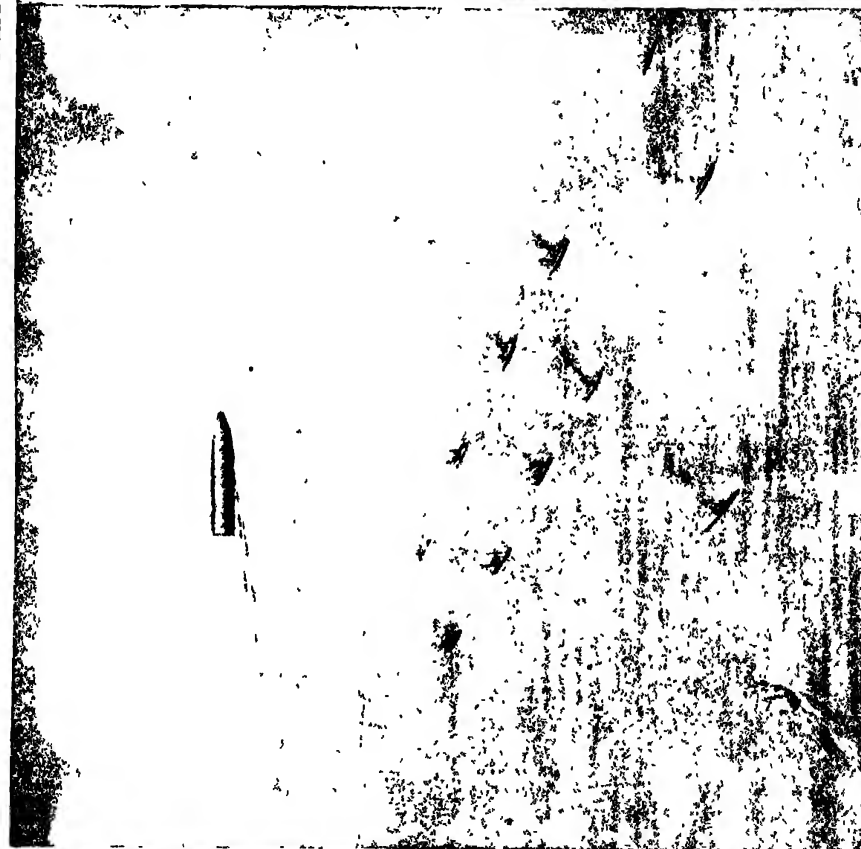
Shrunk and stooped, quieter than in the stirring years of wandering, yet with eyes and heart aflame to want and misery as of old, Father Lacombe's own words may well end his story.

"We are told that in the earlier days of the Church an old white-haired man, bent with age and particularly tried by the labors of a long, painful apostolate, being no longer able to walk by himself, was carried by his disciples into the midst of an assemblage of the faithful, where he did not cease to repeat: 'Little children, love one another.'

"This old man was the apostle St. John. *Eh, bien*, to-day you have before you another old man. I will say to you nothing else than what St. John said; like him I shall repeat to you, 'Love one another.'"

The good Blackrobe died soon after.

HALF A TON OF FIRE AND STEEL FLYING FROM ENGLAND TO FRANCE



A GUN FIRED AT DOVER WOULD HURL A HALF-TON SHELL TWENTY MILES ACROSS THE CHANNEL AND DESTROY A TOWER IN CALAIS
The mighty power of the modern gun seems like some wild nightmare. The weapons with which our latest warships are armed could hurl a mass of steel and explosives weighing half a ton from Dover to Calais in a few minutes, and at the end of its journey the shell would strike with great force and explode, doing immense damage.

The Book of FAMILIAR THINGS



WHAT A BIG GUN CAN DO

THE MOST POWERFUL THING ON EARTH

THE most powerful thing on the earth made by the hands of man is a big gun. With this mighty weapon he can send over a ton of metal flying through space at a speed of over twenty miles a minute, hitting a ship with force enough to shatter it to pieces.

It is a terrible thing to think that this great power is meant for the destruction of life, that the utmost strength that men can put into a thing is put into it to wreck ships or to blow up cities. But the guns are made for use in war and, while war remains possible on the earth, nations prepare for what may happen. The United States and Great Britain, with vast territories and wide seas to guard, put themselves in such positions that other powers will not wish to attack. That is the meaning of all the mighty Dreadnoughts and of the new 14, 15 and 16 inch guns, with which the big ships and the forts on land have been armed.

THE MOST POWERFUL GUNS NOW ON SHIPS

The British Navy is the most powerful fighting machine ever set up on the face of the earth, and it is powerful because of its mighty guns. The most powerful gun in the British

CONTINUED FROM 0059

Navy, the most powerful gun known to be afloat, is known as the 15 inch. There may be some 15 inch guns on German warships, but of this we are not quite certain. That is how we speak of the power of a gun; fifteen inches is the width across the diameter of the muzzle, the point at which the shell leaves the gun. In the United States Navy at present there are no guns larger than fourteen inches. The largest ships carry twelve of these instead of eight of the larger size.

What does a 15 inch gun mean? It represents the power to send a shell right through more than twelve inches of the hardest steel at a distance of seven miles. It can do very much more than that. It might send a shell from the top of Dover cliffs right over to the coast of France. But we are dealing now with the definite purpose of a gun. It is of no use firing great shells at random; each one costs hundreds of dollars to fire. To be sure of hitting, the gunners must have sight of at least the masts of the vessel at which they aim. From eight to ten miles is the greatest distance at which a gunner at sea can be expected to do good work.

Let us suppose, then, that the un-

fortunate day has come when one of these great guns has to be fired, as it has indeed in Europe. Let us describe what actually happened in such a case during the Great War, when the British and German ships fought off the Falkland Islands, in the South Atlantic.

HOW A BIG GUN ON A BATTLESHIP IS FIRED

The ship lies eight or nine miles from the enemy's ship. With his instruments, an officer calculates the distance, and the gun is aimed according to directions given the gun crew. Finally the word to fire is given. The gunner presses a button, a current of electricity is set up, a charge of powder is exploded and, with a deafening roar, the cannon throws out a great shell which speeds through the air.

This half-ton shell, shaped like an immense cigar, whirls through the air, and, in a little more than the time that it takes a fast runner to run a hundred yards, covers the eight miles separating it from the enemy's ship. Its journey is ended, but its work is only now begun. The shell, though it has been flung nine miles, has still enormous power behind it. It may go through the steel armor of the ship and burst into fragments, making an enormous hole in the side of the ship, perhaps entirely ruining it, rendering it a helpless wreck. If that one shell should not do the deadly work, others will follow.

SOME LAND GUNS GREATER THAN NAVAL GUNS

Yet huge as is the naval gun, it is smaller than some of the big guns used on land in the present war. When the Belgians began defending Antwerp against the Germans they expected to be able to hold out at least three months, but in eleven days the massive, concrete and stone fortifications about the city were reduced to powdered heaps by the shells of the German cannon and the city had to surrender.

These great siege guns did not have long barrels such as those on the battle-ships, but were shorter. They were not fired directly at the object to be destroyed, but were fired at an angle, so that the shells described a half circle and fell upon the forts.

THE GREAT GUNS USED IN THE EUROPEAN WAR

The Germans had brought up a 16.5 inch gun, which hurls a shell weighing

a whole ton. Never had such a powerful weapon been used in warfare. The gun itself costs half a million dollars and, with its carriage, weighs 120 tons. Three quarters of a ton of powder is required to fire each shot. When the massive shell from this gun fell on the fortifications of Antwerp it would explode and send a fountain of shattered concrete and stones a thousand feet up into the air, leaving a hole like the crater of a volcano. It is no wonder that the Belgians were unable to hold the city longer. Most of the guns the Germans used were smaller, either eleven or twelve inch, but these were also very powerful. Small shells were dropped in Paris from a point seventy-two miles away.

THE MOST POWERFUL GUNS EVER BUILT

There is, however, a gun even more powerful than "Big Bertha," as the Germans call their biggest gun, after the daughter of the great gun manufacturer. That is the 16 inch gun which the United States has mounted at Sandy Hook, outside New York, to defend the harbor against possible attack. Though it is half an inch smaller than the German gun, it is a real gun, fifty feet long. It fires a shell considerably heavier, weighing 2,370 pounds, and requires 667 pounds of powder.

Two more guns exactly like this one have been made for the fortifications at the Panama Canal. These monsters could sink a battleship long before even its masts would come into sight of the gunners. To accomplish that purpose an officer would go up in an aeroplane, locate the enemy's ship, then signal to the gunner where to aim. Or a tower is built from the top of which an officer could get the position of the ship. The gunner would then aim with his directions as guide. But a tower is not so good as an aeroplane, as it reveals the location of the gun to the enemy. This gun, of course, cannot be moved from place to place, but is fastened securely to a foundation of concrete and steel.

THE GREAT GUNS WHICH GUARD THE PANAMA CANAL

To fire one of these biggest of big guns it must be raised at an angle to fire twenty miles. That is why a ship has never carried so powerful a gun; the recoil from the shot downward would be so great that the deck might not stand the

strain. The United States is experimenting with a 16 inch naval gun, however.

The making of one of these great guns is a triumph of engineering skill. Though a cannon looks solid, it is not made in one piece. The barrel is bored out from solid steel of special purity, and its interior is scored, or "rifled," to make the shell twist as it flies through the air. Then outer tubes, or coats, of metal are "sweated on." That is to say, they are heated, which causes them to expand, and then are fitted over the inner part and allowed to cool and shrink.

HOW TINY WIRE STRENGTHENS THE GREAT GUNS

The makers may go on building up outer coats of metal in the form of joined steel hoops, or they may wind wire on a gun. The wire, wound by machinery, is coiled round and round, till more than a hundred miles of it has been wrapped around the great cannon. Great as is the strength of the wire in resisting pressure which pushes out at the sides, it does not give strength lengthwise. Extra thickness of metal must, therefore, be given at the muzzle of the gun, where the vibration caused by the shell leaving the weapon is heaviest.

The back of the gun is the breech. It is here that the shell is placed, in a specially constructed chamber. When the shell has been fixed in position for firing, the breech is closed and fastened by enormously strong screws, so that the charge shall not burst the gun open at the back. When all is ready, and the word to fire is given, an electric spark is kindled and this fires the charge which sends the shell forth on its terrible work.

THE DIFFERENT EXPLOSIVES USED TO DRIVE THE SHELLS

The explosives used in big cannon are of many kinds. Some, as those used in quarrying, are intended simply to rip and tear and break. Others are intended to drive things forward. Those which change to a gas immediately, of course exercise greater power for a minute. They would probably burst a gun, but are used in shells which burst outside. An explosive which changes to a gas more slowly is used to force the shell out. The shell itself contains a quickly burning explosive which bursts the shell later.

And this brings us to the whole mystery of the flight of the shell. When the charge is exploded, either by heat

or shock, the effect is the same. Gunpowder, of course, is a powder, but cordite is not. It looks more like a kind of cord, and it is that fact which gives it its name. There are many other high explosives with different names. But the effect is the same in all cases. The electric spark, or other form of heat or shock, explodes the charge. In an instant the mass of the explosive which discharges the shell is converted into boundlessly expanding gas.

THE EXPLOSIVE IS CHANGED TO GAS, WHICH NEEDS MORE ROOM

Gas takes up a great deal of room. The gas cannot get space in the cannon, because the huge shell is in the way. As nothing can stop the gas from expanding, in its gigantic effort to free itself, the great shell is sent spinning to the muzzle of the cannon, and out for twenty miles into space. A shell weighing a ton can be driven from England to France in a minute or two.

An explosion of gas in a house will blow all the windows out and perhaps shatter a door or two and bring down a wall. But imagine that explosion enormously multiplied, *occurring within a tiny steel chamber!* We can fancy how things would fly then. That is what happens in the terrible recesses of the mighty gun. The explosive, changed into enormously powerful gas, must instantly find its way out. There is only one way out, and that is up the tube of the cannon to the open muzzle. The shell is in the way, and the shell must go.

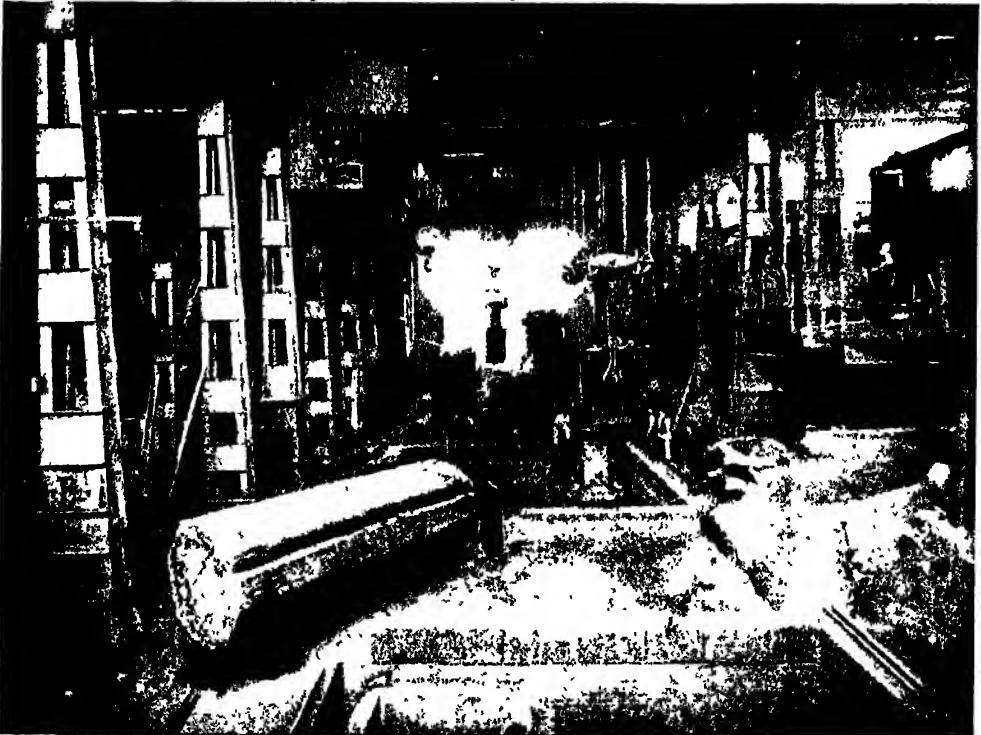
Explosives such as cordite, or smokeless powder under different names, are used in preference to gunpowder. Since they are smokeless they do not betray the gun to the enemy. They explode more gradually and do not exhaust themselves so quickly. To fire a big shell would require such an enormous quantity of gunpowder and it would explode so quickly that it would probably burst the whole gun before the shell reached the muzzle. Aside from that, cordite, since it explodes more gradually, does not heat the sides of the cannon so much. Cordite, however, creates such intense heat that it melts a little of the inner surface at each shot and the very big guns can only fire a limited number of shots. After that a new lining must be put in.

THE NEXT STORY OF FAMILIAR THINGS IS ON PAGE 6197.

THE BIRTHPLACE OF A MIGHTY GUN

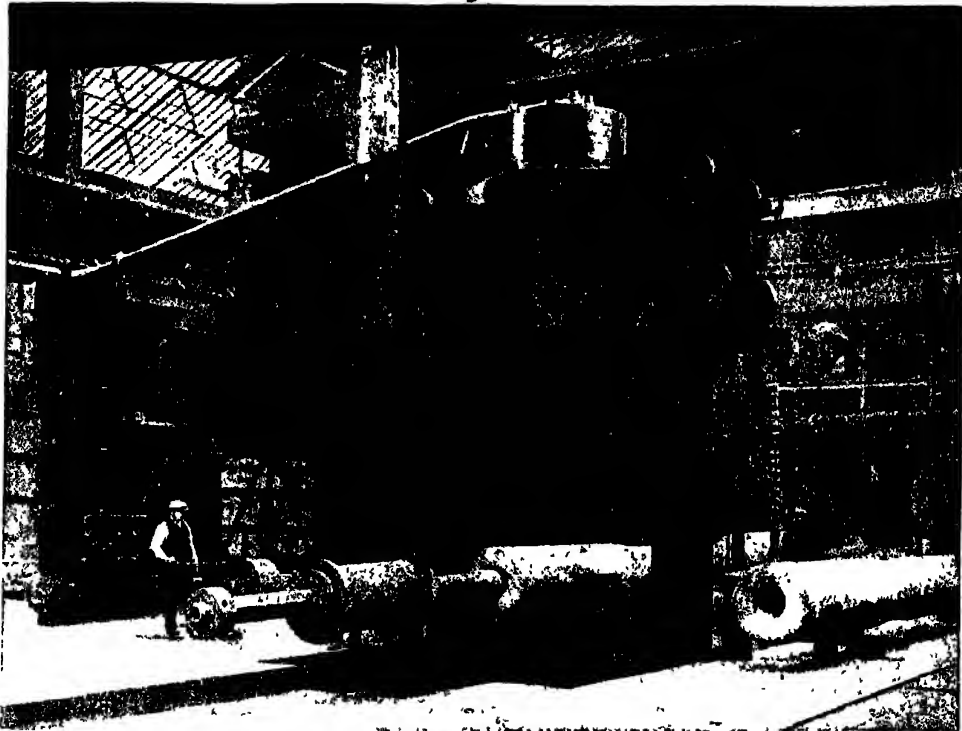


Of all the wonderful inventions conceived by man, perhaps none can so truly be regarded as a symbol of might and energy as the big gun, of which these powerful steel furnaces are the actual birthplace



The steel is drawn from the furnace in a fiery stream, and carried in a great ladle to the casting-pits, as shown here. When it cools it becomes a solid ingot of fifty tons, like that seen on the left.

HAMMERING THE JACKET INTO SHAPE

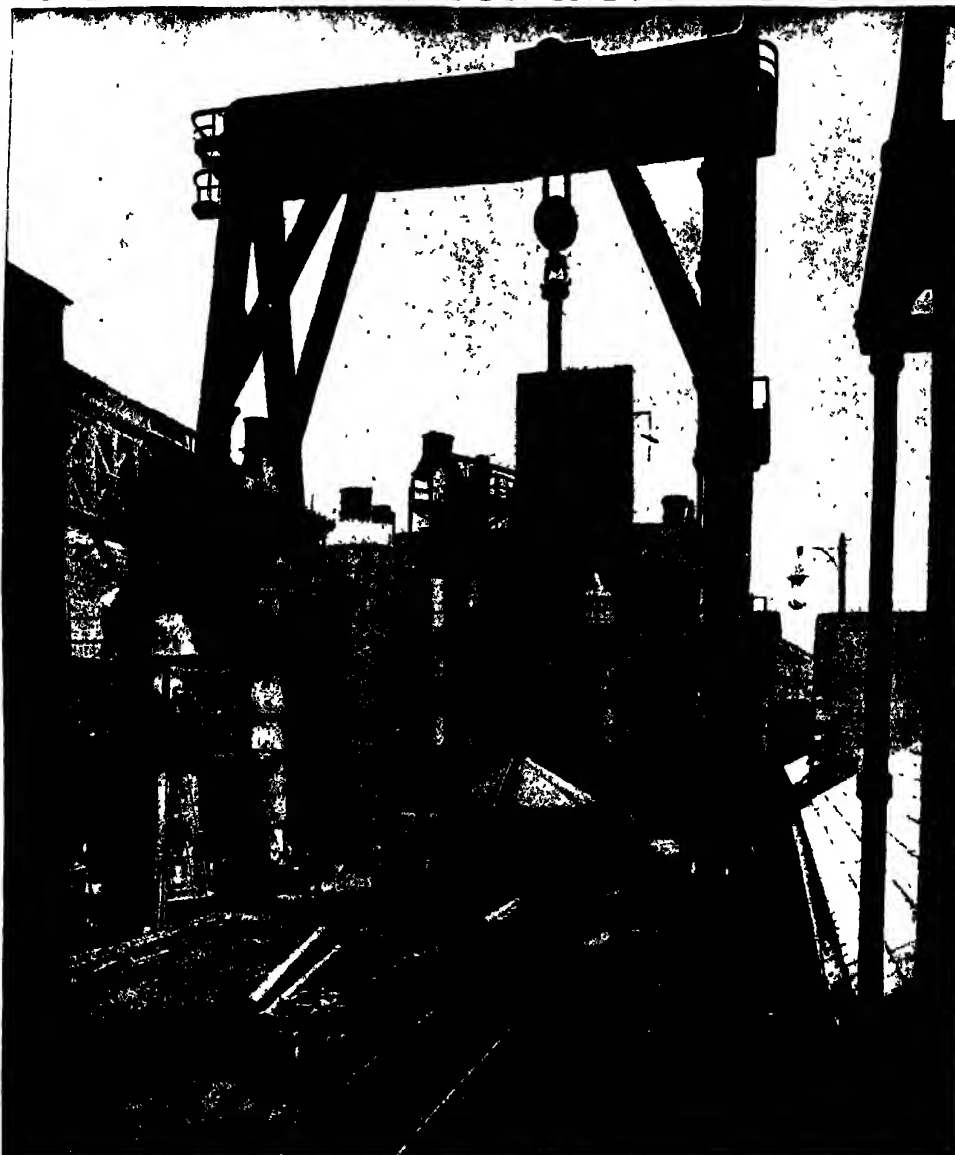


The modern big gun is not a solid mass, but is built of steel tubes fitted one upon another. In this picture we see one of the great barrels of our largest type of gun being forced, or pressed, into shape.



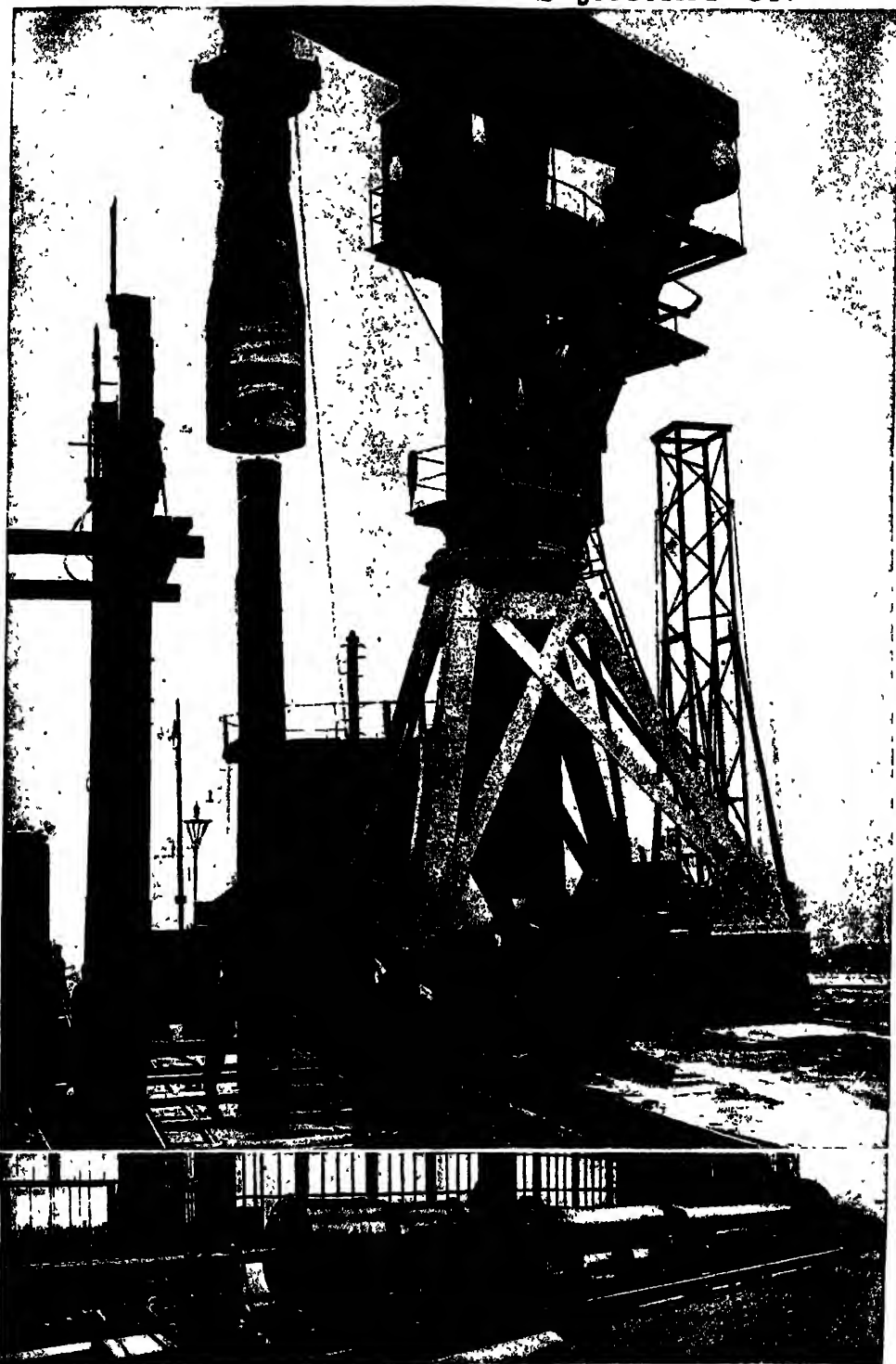
This is the jacket of a big gun, the shaping of which by a hydraulic press is nearly finished. When completed this gun will hurl a shell weighing half a ton a distance of thirty miles in a minute or two.

DIPPING A 50-FOOT GUN INTO A PIT OF OIL



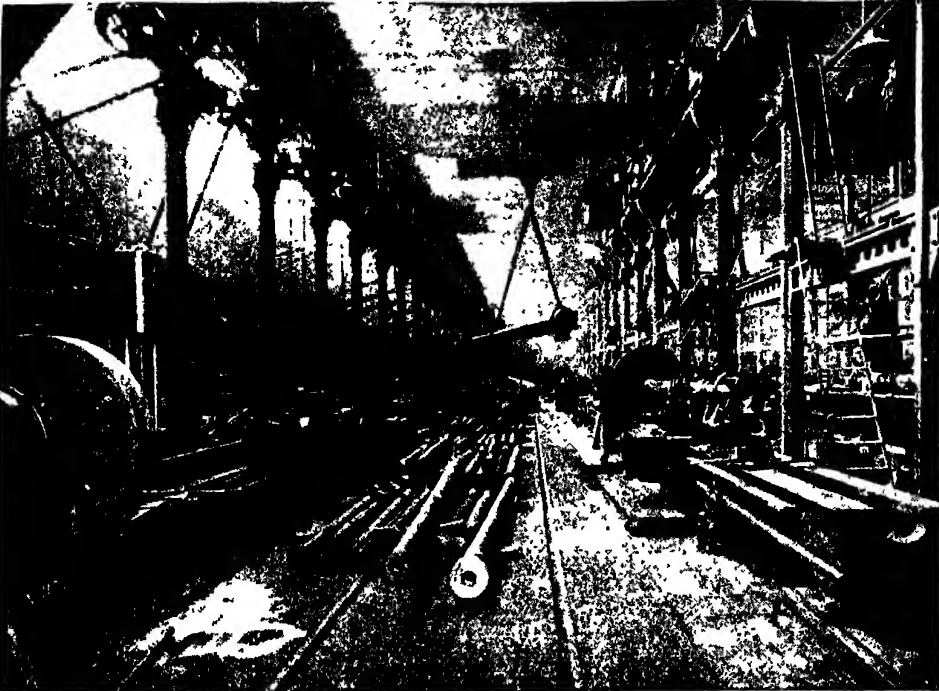
The inside tubes of a gun are cast and forged like the outer jacket. After a tube has been turned, cut into shape outside and bored through the middle, it is heated and let down by a crane, as shown in top picture, into a pit of oil to harden it. It is then taken out, straightened if it has become bent, and turned, or cut, into shape outside. The lower picture shows the outside jacket of a gun being turned.

PUTTING A BIG GUN'S JACKET ON



The main tubes of the gun are fitted one upon another and sometimes steel wire is wound round them. The wire for one gun is 117 miles long, and would stretch from New York to Hartford. The outer jacket is slipped on, as shown in the top picture. The outside of the gun is turned on a lathe; the inside is again bored so that it may be perfectly even. The bottom picture gives a good idea of the boring operation

THE INSIDE OF A BIG GUN WORKSHOP



This is the kind of workshop in which a big gun is made. It is of enormous size, and the machinery is the most powerful in the world. Gigantic cranes lift and carry big guns as though they were toys.

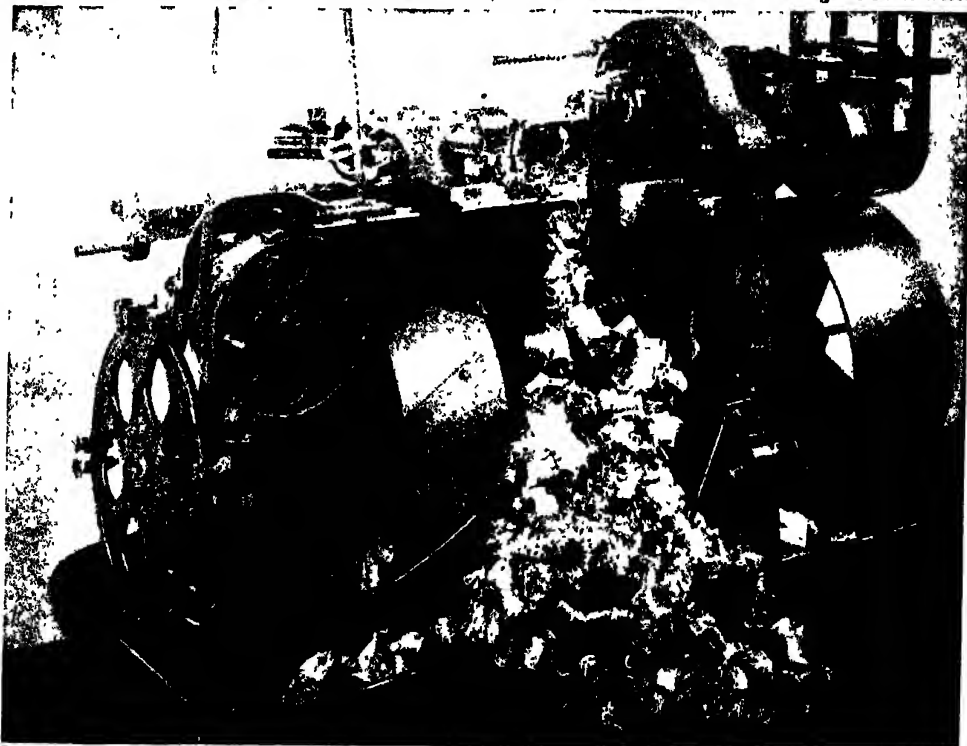


This is the mounting department. When the gun is finished, and has been tested by firing as shown on page 6147, it is brought here and mounded upon a carriage with very clever and elaborate machinery for turning and tilting it. It is then ready for fort or battleship. However good the gun might be, if it were not properly mounted so as to turn about in all directions it would be almost useless in war. Many photographs in these pages are published by permission of Messrs. Vickers, Sons, & Maxlin; Sir W. G. Armstrong, Whitworth & Co.; and Messrs. William Beardmore & Co., in whose works they were taken. Others are by Stephen Cribb.

THE KNIFE THAT SHAVES STEEL LIKE PAPER



In the boring and turning operations the steel of the guns has to be shaved off. In a small picture this marvelous operation on a gun cannot be well shown, but we can see a small lathe doing the same work.



These pictures show how easily steel can be shaved by a powerful lathe. The big guns are made of the very finest steel that can be manufactured, and to be able to cut such a metal is an engineering triumph.

WHAT A BIG GUN IS LIKE INSIDE



These pictures show the muzzle of a big gun. On the left the boy on the shoulder of the sailor is looking at the grooves, which cause the shell to twist as it is fired, thus adding tremendously to its speed.



In old days a gun was fired by applying a light to the gunpowder; now elaborate machinery is fitted to the back of the gun to send the shell on its terrible journey. Experience is needed to handle a gun.

A LITTLE GUN AND A BIG ONE



Picture from Underwood & Underwood, N. Y.

This is not a big gun, but it is one of the most useful guns in warfare. It is one of the famous French "seventy-fives." The French use the metric system, and the bore of this gun is seventy-five millimetres, about three inches. It is very accurate, can be fired rapidly, and seldom gets out of order.



Picture from Brown Bros.

This is one of the great coast defence guns at Sandy Hook. It is mounted, as you see, on a disappearing carriage. This means that when the gun is fired the recoil moves it backward quickly so that it cannot be seen over the top of the pit, except from an aeroplane. When loaded it is brought forward quickly.

ONE OF THE GREAT KRUPP GUNS



This is one of the great German guns used against Antwerp and other Belgian fortresses. They were fired upward as you see and the descending shells shattered all fortifications against which they were aimed, and reduced them to masses of concrete and twisted steel. Nothing could withstand their force.

Photograph, Underwood & Underwood, New York.

THE AUSTRIAN GUN WHICH PROVED SO EFFECTIVE



These Skoda guns, firing a 12-inch shell, proved very effective against the Russian fortifications. They are lighter than the Krupps and can be more easily moved from place to place. Both are fired at a great angle, and the shell describes a curve and falls with tremendous force. The shell which is fired is filled with some high explosive, that is, one which changes to gas very quickly. The shell can be arranged to explode in any number of seconds, or upon contact with some hard substance. Copyright, Underwood & Underwood, New York.

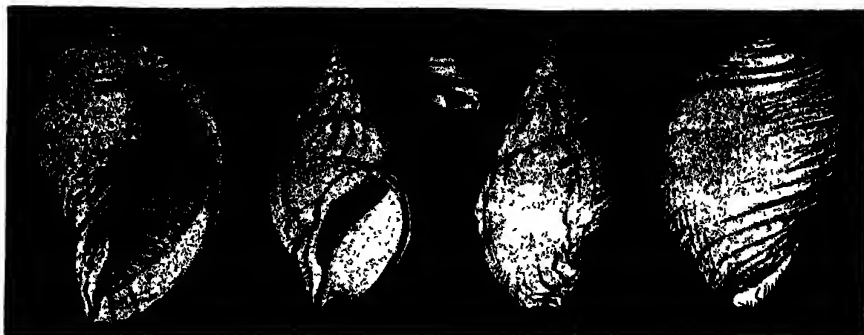
THE GREAT SKODA GUN BEING MOVED TO ANOTHER POINT



A powerful motor pulls the gun, weighing many tons, from place to place when necessary. The gun itself is in the rear, while between is the carriage. This contains, besides the foundation from which the gun is fired, the recoil mechanism which absorbs the shock when the gun is fired and prevents it from shattering itself and everything around. Notice the broad wheels, intended to prevent the crushing of the pavements. Few bridges, however, were able to sustain the enormous weight, and unless the roads were very hard it would sink down into the soil. The men are all needed to take care of the gun.

Copyright, Underwood & Underwood, New York.

THINGS TO MAKE AND THINGS TO DO



DRAWING THE THINGS WE SEE

WE are learning to hear the beautiful music that is at the heart of everything. When we all can hear it and love it, then the Golden Age will have come. Many are seeing the dark night change to the beautiful colors of the dawn of this age, and are glad. We all want to see them too, and to feel the gladness.

We have learned already how important it is to look carefully at the boundary lines, so that our minds may compare them accurately before we begin to draw; and we know that the accurate relation or proportion of line to line—that is, their *values*—forms the alphabet of drawing, or the notes of its music. Now we will consider how to look for shapes.

Fill a narrow-necked bottle with water, and put into it the stems of the leaves or flowers you mean to draw; it would make us dislike our drawing lesson if, when we had finished, there were lying before us bruised and dying plants.

Now take a simple-shaped leaf, and put it before a piece of paper similar to that on which you will draw. Thus we shall receive the same impression from our finished drawing as from seeing the leaf against its background. It also helps us to fix our attention upon the leaf, by shutting away all other objects. Draw the leaf just as you see it; do not draw the outline only, but fill it in with crayon the same color as the leaf. When you have finished, put your drawing near to the leaf and sit down again, so that you can see the two—the real leaf and your drawing—from the same view that you had when you drew it.

First let us look at the real leaf, and find out exactly what we want to tell others. Notice that the boundary lines are not up-right; they curve. Now look at the whole shape, and see whether it is as wide as it is long; or if it be half as wide, or a third, and so on. Then notice where the widest part

CONTINUED FROM 6084

occurs—at the half of the length, above, or below it. Observe whether the top of the leaf is more rounded or sharper than the bottom. Thus you will have found just where the curve changes from one direction to another; which position is the rounder and which the flatter. This is most important. Look at both sides, and see the shape enclosed by them.

We know now what to look for, and are ready to compare our drawing with the leaf. We must do so in the same way as we considered the leaf.

We must give our eyes time to see, and our minds time to judge quietly and fairly whether we have drawn a faithful portrait. We are beginning to realize that we cannot draw truly until we have definite knowledge of the boundaries of the shapes. Knowledge must come first. Our drawing should be the result of knowledge of shapes gained by examination. A line by itself means nothing. It is quite right wherever it is placed. A line by itself is never wrong. It can only be wrong when placed into position with the fellow-line needed to complete the shape. It is the shape enclosed that is right or wrong. So when we have judged the values or lengths of lines one with another, we must be careful to draw the lines in just the right proportion. When we draw a line we must be watching its fellow.

Shells are beautiful. This is because they have shapes of different sizes, falling side by side.

Take every shell you have which has a spire. Place these in a row, with their mouths facing you and their spires at the top. Notice that these mouths nearly all occur on the right side as they lie before you; that they are rounder and fuller on the mouth or right side than on the left; that the long line on the left ends with a gentle, inward curve to the canal, or lower

end of the shell. Now decide the position of the mouth—whether it extends half-way, a quarter, and so on, across the shell, and how far up. Count the turns of the winding pathway up the spire, and notice how very much it narrows at each turn. Now draw the shells. Watch carefully the whole shapes, not the boundaries of them.

We see how important shapes are. Let us look at the piece of ornament on this page, and its analysis. We see that under these leaves there are lines of music. This is why the decoration pleases us and is like music to us.

To our list of things to draw we will add objects with curves in them—leaves of every kind, shells, butterflies, and feathers.

Now we will consider objects such as boxes and baskets, objects of which we may see two or more sides, the others being turned from us.

Take a cardboard box, and with the crayons color one side red, another blue, and the top green. Place it on a large piece of white paper, and make a portrait of it on tinted paper just as you see it before you.

Now let us examine the box.

Which is the largest surface, the blue, the red, or the green? Look carefully from one to the other. When you have decided upon the largest, look at each of the others, and compare them in turn. We know now definitely the relative values of these three shapes—that is, we know which is the largest, which the smallest, and which comes between. Look at your drawing, and see if you have put these shapes into their right places.

If they are not right, let us find out why. There must be something wrong with their boundary lines. Perhaps their lengths are wrong, or they do not go in the right direction. Suppose you are standing at the corner, between the red and the blue surfaces. Now put out your arms the way the long lines of the red and the blue surfaces go. You do not put out your arms straight with your shoulders. The left arm goes towards the corner of the room; and the right is

also forward, but not so much as the left one.

Look at your drawing. You represent the middle line between the red and the blue. Do the lines in the drawing go in the same direction as your arms? Then why not?

If you had put in with the white crayon the shape of the ground on which the box stands, you would not have made this mistake. Now place your

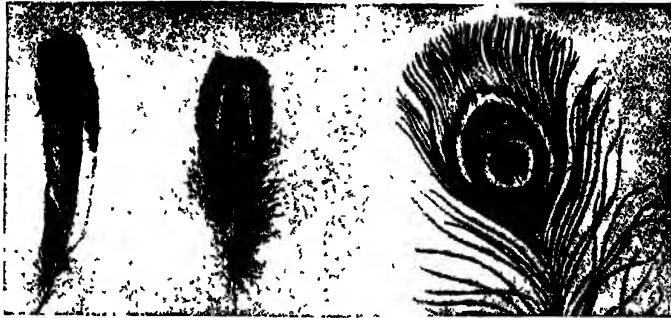
drawing near to the box, and sit in your seat again, and compare the two. Does the drawing give us the same impression as the box? Is it like the box? Look from one to the other.

If the shapes are wrong, then we have been strangely unjust. We had before us three shapes to judge. We have not been honest with them. We did not carefully enough compare one with another. So after this queer portrait, or, better still, begin again, and remembering this time to get the relative sizes, the

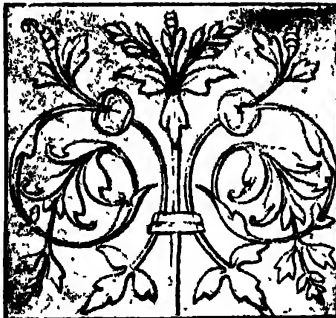
boundary lines and the correct direction, make another portrait.

We must not forget that in drawing we are dealing with appearances. If we know that a side of an object is really long and wide, but looks

small to us because it is turned from us, we must draw it small. If we know that another side of the object is really small, but appears to be the larger because it is turned towards us, then we must make it the larger. This rule is of the greatest importance. We must always be very careful to draw the surfaces *just the size that we see them*, neither greater nor smaller, notwithstanding our knowledge of what their true size may really be.



Beautiful shapes of feathers.



In the right-hand picture we see the beautiful shapes and lines of music underlying the decoration on the left.



A PLAY LESSON

Suppose the beautiful princess is going to see her friend at the house in the lovely garden. Her friend will, of course, want to be polite, and to do all possible honor to the gracious princess, and will hurry to bring the chairs out into the garden.

A GAME OF SKILL WITH CORKS

Now set to work and draw those chairs. Some must face us, some will be sideways, some will have their backs to us. But one has been knocked down by a clumsy maid.

Let us draw this one too. You say that you are not able to draw a chair lying down!

Well, when we want to draw an object that we think we cannot, we must be still for a moment, shut our eyes, and try to imagine it. We shall see it quite plainly after a little while. We shall notice objects much more thoroughly when we have tried to draw them from memory, and so we shall learn how carelessly we have hitherto looked at things.

Make a cardboard chair with no separated legs, really a box with a back. Color it as you did the box, and draw it just as you see it from every possible view. Watch the shapes, as in the drawing of the box.



THE BEAUTIFUL SHAPES OF LEAVES

Let us put in some flowers and grass. Grass is not hard to draw, and we can make our

flowers look natural if we have patience. We might try to draw the princess sitting on one of the chairs.

Now see what else you can put into the picture. Never mind how funny your

drawing looks, or what queer things you draw. Keep on drawing, and then look at real people sitting down. Try to find out why these friends do not look as if they were sitting. Perhaps you have forgotten to bend their legs at the knees, or at the body!

There is nothing more true than the old saying that we learn to do by doing. But we must remember that this does not mean that we shall learn if we keep making, carelessly, the same mistakes every time. We must try to improve.

A GAME OF SKILL WITH CORKS

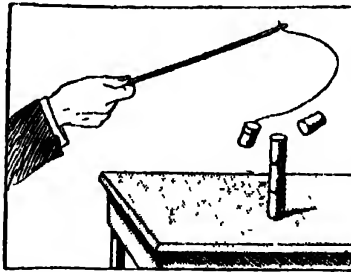
A SIMPLE game that, nevertheless, gives plenty of scope for skill and careful exercise with the hand can be played with a number of ordinary bottle corks. These may be from larger bottles, like those in which we buy vinegar, or they may be from the smaller medicine bottles. The only essential is that they should be fairly good and level corks that will easily stand upright.

The only preparation needed beyond the collection of the corks themselves is the making of what we may call a fishing-rod. Any ordinary thin stick or cane will do, and it should be about eighteen inches or two feet long. To the end of this stick we tie a piece of thin, flexible string about two feet long, and to the end of the string a cork, similar to those that we have collected. The picture shows what the fishing-rod looks like.

Now on a table we pile up the corks, one on top of another, using as many as will stand

in this way, so as to get as high a pile and as many corks as possible.

The game is to stand or sit at the side of the table, and with our fishing-rod gently to flick or touch the top cork of the pile, and knock it off without upsetting any others.



REMOVING THE TOP CORK

Having done this, we try to knock off the next cork, and so on. So soon as we disturb another cork besides the one for the time being at the top which we are removing with our fishing-rod, we lose our turn, and another player piles up the corks once more, and sees how many he can flick off. The player who removes the largest number of corks, one at a time in the manner described without disturbing a second cork,

wins the game. With a little practice we soon become quite skilful. The chief thing to aim at is to hold the arm very steady, and at the same time to keep the wrist quite supple. Avoid quick jerking movements, and swing very evenly and quietly.

THE WAY TO SHARPEN A LEAD PENCIL

A LEAD pencil that is improperly sharpened is neither useful nor sightly. If the pencil is for sketching, it should be sharpened equally all round so that a perfect point is produced, and the wood should be cut away at a gentle slope. Short, stumpy points and very long, tapering points are equally bad.

If the pencil is to be used for drawing straight

lines, as in perspective work, then it should not be sharpened to a point. Cut the pencil with a long slope on opposite sides, so that the end is chisel-shaped, and then slightly round the angles of this chisel end. A pencil sharpened in this way may be used for line-work for a long time, and the best way to resharpen it is to use a piece of sandpaper.

TWO WAYS TO MAKE A GARDEN HAMMOCK

WHEN the summer months approach and the fine sunny weather draws nearer, we all like to spend as much time as possible out of doors, and there is nothing more delightful than to lie in a hammock under the shady trees with an interesting book.

It is quite easy for any boy or girl to make a hammock that will be quite attractive and comfortable, without the trouble of learning to do network. We can make a hammock of striped canvas, or of any similar material such as is used for awnings. The size of the hammock depends, of course, upon the size of the person who is going to use it, but if we are going to make a hammock that will take a fully-grown man or woman, we want a piece of material about three and a half yards long by a yard and a half wide. A material with a narrow red stripe always looks pretty.

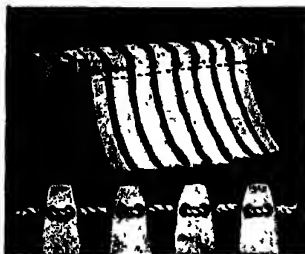
If the material is the full width required, there will be a selvage at each edge, so that it will not be necessary to hem it. At each end of the material we fold over about two inches, and sew it down in such a way as to make a deep hem with room for a stout piece of wood to be slipped through as shown at the top of the first picture. At each end of each stick we cut a small groove or notch, as shown. Then, taking a rope, strong but not too thick, we tie the ends to the grooves in the stick at what will be the head, or upper end, of the hammock.

A similar rope is tied to the stick at the other end of the hammock, which is now ready to be slung from a tree. The length of the rope tied to the sticks at the ends of the hammock depends upon where we are going to hang it and we must decide this, and measure the length of rope required. With a cushion for the head we have a very comfortable hammock, and the cost in money and trouble for the whole of it is very little indeed.

Instead of the pieces of wood, top and bottom of the hammock to keep it spread out flat, we can, if we like, thread the rope through the hem, and when we sling the hammock and get into it, the ends will be drawn together and the canvas become boat-shaped. Some people prefer this style of hammock, and it is as easy to make as the other.

Still another kind of hammock, not so comfortable, perhaps, but yet very useful, can be made for a few cents from old barrel staves. We can easily get some barrels which we can take apart. Then measure off on each stave about two or two and a half inches from the ends, and draw pencil-lines. Using these

lines as guides, we bore two holes at each end of each stave, and then thread the staves together, as shown at the bottom of the first picture, using a strong, flexible, but slender rope, and leaving from one to two inches between the staves. Tie knots at the four ends of the ropes to prevent the staves from becoming unthreaded, and then attach loops so that the hammock may be slung wherever it is wanted. Of course, this simple wooden hammock will not be quite so soft and flexible as one made of canvas or of net, but if it is covered with cushions or with a rug it will make an excellent resting-place.



How the hammock is made.

It is important in selecting our barrels from which to obtain staves that we choose only those that have dry, sound wood. Do not have a barrel in which the staves are at all split or dented. A splinter in one's arm or leg, or a sudden fall, are not among the pleasures that we are anxious to get from our hammock. In hanging a hammock we should always see that there is a considerable stretch of rope at each end.

As regards the first kind of hammock described on this page, if we do not want to go to the expense of buying canvas, we can use an old piece of carpet, or even a couple of old sacks, so long as they are strong and sound. With these, and a long piece of strong rope, we can make a hammock in a few minutes, and if a good rug be thrown over it as a covering, the material of which it is made will be unseen.

The hammock is a very ancient luxury, dating back to Greek times. Columbus, too, found that the natives of America used swinging beds, and it is from them that we get our word hammock. The word comes from the hamac-tree, the bark of which was netted and used by the Indians for their hammocks. In South America, to-day, the hammock is used in all the rubber and coffee plantation



The canvas hammock complete.

camps for sleeping purposes.

Some little skill is generally needed before we can get in and out of a hammock easily, but with practice we shall soon be able to do it.

Amusing accidents sometimes occur when one tries to get out a little too quickly, or else does not take care to keep watch of his balance.

The hammock has such a provoking way of turning upside down, and when this happens, of course what was on the top goes to the under side and one goes straight to the ground, and gets perhaps a bumped head and certainly a surprise. It is well to have two rings attached to the ropes, for when the air is damp the ropes grow shorter, and, therefore, the hammock is raised too high.

A WORK-BASKET THAT A GIRL CAN MAKE

WE all know the little round wicker baskets shown in the picture below, and called egg or stocking baskets. They cost little, varying according to size, and, properly fitted up, make the very nicest little work-baskets imaginable.

We are going to line our basket with cretonne, and put "workmanlike" little fittings all round to contain our sewing materials.

We shall need half a yard of thin cretonne, with a small pattern on it in pink and blue, or in two other prettily contrasting colors, such as yellow and brown or mauve and green.

First, we cut a strip of cretonne 2 inches longer than the basket is round, and 2 inches wider than the basket is high.

On this strip we sew a couple of little cretonne "patch-pockets," about 3 inches square, and a slot-holder for the scissors, and other things, with four divisions. This is made of a folded piece of the cretonne, 1 inch wide, and about 3½ inches long, as we see in the first picture

Our strip is now ready to be sewn into the basket. We turn in the top edge all along—an inch turning will do—and neatly sew it all round to the inside of the basket with a big needle and thread. We must take care to let the stitches show as little as possible, by using thread the same color as the basket, and we must not attempt to pierce the willow with the needle, but pass it between the pieces, to make the necessary stitches. Where the ends meet we join the cretonne by folding the last edge in, and catching it down to the other.

At the bottom edge our strip will be a little too full, so we arrange it to fit by making a small pleat here and there as we tack down the raw edge to the bottom of the basket. Note that we do not turn in the bottom edge, because it is long enough to lay on the bottom of the basket and be hidden by the bottom cover—which is made separately on a circle of stout brown paper or cardboard cut to fit,

and covered with cretonne. We sew the cretonne to the brown paper with white thread—using big stitches on the wrong side and little ones on the right—all round the edge. A few firm stitches taken through the canes will hold it quite firmly in its place.

We can now, if we like, make a little ruche, or frilling, of inch-wide cretonne, and sew it all round the top edge of our basket, but if we have done our work neatly this is not necessary. The

basket in the picture is finished with a bow of ribbon only.

Now about filling our basket. We shall need a pair of scissors, two bodkins—one large and one small—some needles and pins, pearl and shoe buttons, a tape

measure, and thimble. With a 3-inch square of cretonne we make a little pin cushion and stuff it with cotton, and hang it on the side of the basket with a 3-inch piece of cord, as we see in the second picture. We shall want, too, a little needle-book, made in the usual way—a stiff cover and flannel leaves. This we also attach with cord, leaving enough to allow us to get to it easily.

The tape measure we can fold up and slip in one of the slots, with the scissors and bodkins; while the thimble, and any other odds and ends we find useful for sewing purposes, can go in one of the pockets, and the buttons in the other.

The two or three spools of thread, which we must not forget, must lie in the bottom loose, where they can be easily found. Every

girl should own her own dainty work-basket where she can keep her thread and needles and other sewing accessories. The man who said he would not marry the girl who spoke of losing "our" needle was quite right, for it implied many lacks beside that of needles and thread.

A fitted work-basket is a very expensive thing to buy, but one like this can be made for a small outlay, and will be as satisfactory as one costing many times as much.



How to arrange pockets and slots on half the length of the slip of lining.



The work-basket complete.

HOW TO WALK IN A STRAIGHT LINE

IT may seem quite easy to walk in a straight line, but, as a matter of fact, it is almost impossible to do so.

What we must do is to fix our eyes upon two objects in front of us, the one nearer to us being smaller than the one farther away. The two objects must be in line, and as we walk we take care to keep them all the time exactly in a line before us—that is, one object exactly in front of the other in our vision.

As we approach these two objects we must select a third, also in a line with the others,

and after we pass the first object we can use the second and third as our guides. Then, as we approach the second object, we select a fourth, and so on, taking care, as we walk, always to have at least two objects coinciding with one another in our vision. Any objects can be chosen for this purpose, though if they are on a level with the eye it is a great advantage. Trees and shrubs, posts and telegraph poles, stones and hillocks, are only a few of the many objects that will occur to the mind of any boy who determines to perform this feat.

A ROLL-UP CASE FOR SILKS

THOSE of us who are interested in embroidery should make a little case to hold our skeins of silk. It is rather a good idea to think of such a case as a paint-box, and to use it in much the same way.

For this case, which holds twelve skeins, each in a separate slot, we should need half a yard of crash or colored linen, a scrap of flannel for the needle leaves, and a yard of brown cord. It measures 24 inches by 13 inches, and the piece for the slots, 6 inches by 18 inches. Of course, we can choose the colors we like best; and the outside need not be made of linen, but can be made of silk, cloth, velvet or satin.

The case piece is cut oblong, and afterwards only one end is shaped as shown in the picture below, which shows the case opened out.

First, we hem the material all around very neatly, and then make the little pocket which comes at the other end by doubling the stuff over 4 inches and sewing it down. This pocket is useful for all sorts of odds and ends, scissors, pencil, thimble, the threader—which we will explain presently—and will even take a small piece of any embroidery we may be working on.

To make the slots, we just hem the 6-by-18-inch strip all round, and then sew it down to the crash foundation in a series of flutes. Each flute will be $1\frac{1}{2}$ inches of the strip sewn down to 1 inch of the foundation. It will be quite easy to do this if we tick off the measurements on both pieces with a lead pencil, then all we have to do is to join the points together.

The position of the flutes can be seen in the second picture. We sew the strip in the middle of the foundation, starting two inches from the bag, or pocket. At this point we fit in our two needle leaves, neatly notching the three edges with scissors, and sewing the fourth edge just under the first flute. We must "back-stitch" each flute down, and very firmly sew it at each end with several stitches, one over the other, or they will come undone.

The inside of our case is now ready for use, and the only thing we have to get for it is a long pin, or "threader," made of 15 inches of copper wire, just bent exactly like a hairpin. This we use as a bodkin is used to thread

each skein through a slot. It is a good plan to group the different shades of each color together. Thus it is easy to avoid mistakes in matching, and trains our eye to keen perception of color.

The cord is sewn on at the point in front and used as a fastening, and the ends are finished with knots.

The front of the case we shall decorate with a medallion of embroidery—a circle $2\frac{1}{2}$ inches across, filled with a pattern, worked in crewel stitch, and having its background filled with French knots. We do this on a separate

little piece of crash, cut half an inch larger all around; the edges will be turned in, and we shall hem it to the foundation when finished. In the medallion is a shaggy marguerite.

The pattern for the medallion given in the first picture must be traced off, and transferred to the material by means of a sheet of blue carbon paper. If we have not done any French knots before, we must work a few on

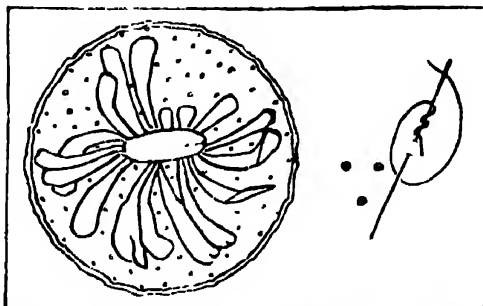
an odd scrap of stuff first. They are not difficult. The thread is brought up to the right side of the stuff, and a tiny stitch is made near the point where the thread comes through; but first we have wound the thread twice round the needle, and after the stitch we have looped it once over the point of the needle before pulling it tight. This leaves a neat knot on the front, and we have only to take our thread through the same hole through which it came to the back before beginning the next knot.

The particular form of decoration shown here

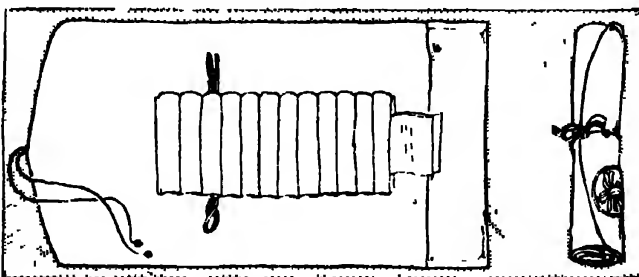
has been suggested chiefly on account of its simplicity. The medallion makes up charmingly, but if we prefer something more elaborate, we can, of course, substitute any pattern that commends itself to our taste.

With clever fingers and a little ingenuity we can make ourselves many such dainty accessories for our needlework. It should be the delight of every young girl to have the contents of her work-box pretty and attractive to the eye as well as tidy and useful.

The girl who keeps her silks this way will save much time which would otherwise have to be spent in untangling them, and we all know that such a task is very provoking to one who is naturally of an orderly disposition.



Design for medallion; how to make French knot.



The case as it appears when opened out and also when rolled up.

MODELING A BOAT, BELL & MATCH-STAND

UP to the present the models we have made have been worked up from the sphere, or ball. The canoe, the first of the present set of models, is of a very different character. Instead of using the sphere as a beginning, we take the roll; or, rather, the cylinder. Our method of work, therefore, will be somewhat different. The model will demand considerable skill, and we must not be discouraged if our first efforts fail. The canoe, if made well, and its parts proportioned without too great a bulk of material, will float quite easily. It is to be made by the fingers entirely out of one piece.

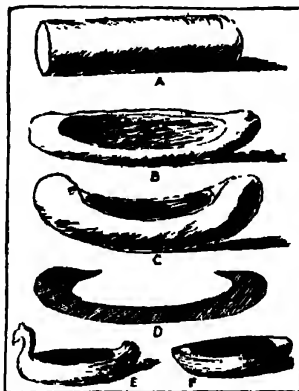
Before beginning, we knead our plasticine thoroughly and see that it is fairly soft. Roll out a piece of suitable size to the form shown at A. Then, while it rests on the slate, with the first finger of the right hand press down its length a hollow, or groove, as shown at B. This pressure repeated will cause the material to bend upwards at each end, as seen in the picture.

Now, holding the model in the left hand, continue the pressing, and make the groove deeper, as shown at C. Force the finger-tip

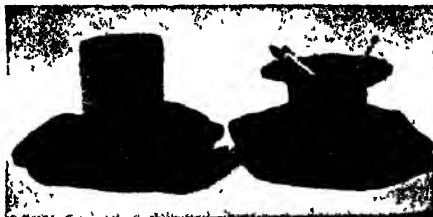
ences in the shape of these, but with practice we should be able to make them with ease.

The hand-bell illustrated has much in the making of it that is similar to the last model. It is quite possible to make it

from one piece of material, but it is better to make it in two parts. The bottom part should be made first. The little sketches, A, B, C, D, show plainly the various stages by which we reach the correct form. Roll out a short cylinder, and, holding it in the left hand with the fingers round it, bore a hole about two-thirds of the way through in the direction shown. This may be done with the finger if it is strong enough; if not, a lead pencil will answer the purpose nearly as well. This will give the appearance as shown at B. Still grasping the cylinder in the same manner, rotate the pencil or finger in the way marked by the arrows in C. This will widen the hole, and cause the spreading out of the end to be evenly done. It thus roughly assumes the bell shape shown at D. With fingers and thumbs mold it carefully until it assumes the correct form, preserving the hollow



VIKING BOAT AND CANOE



THE MODELS AS THEY ARE WHEN COMPLETED

well into the thick substance at each end—see figure D—and work the material well over the space which the finger-tip has made. This will give the sheltered ends. We must not, of course, attempt to make the hollow by cutting out. Cutting or carving is not modeling. The ends are shaped by finger and thumb, and the whole is made smooth by stroking lightly. The exact shape of the ends can be varied to suit our own taste. But we must be careful to make the ends even, otherwise the canoe will not float well, and our model will be spoiled.

This exercise can be used as the basis of many others—the Viking boat, for example, as shown at E; or the ordinary type of boat, as illustrated at F. There are differ-

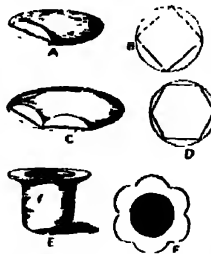
ences in the shape of these, but with practice we should be able to make them with ease.

as shown by the section marked x. We shall see that the material is left thicker at the top, and decreases in thickness down the sides. This is to ensure stability, or firmness, and to allow of sufficient substance in which to fix the handle. Make both the interior and exterior as smooth as possible by gentle pressure while stroking with the fore-finger.

There may be many varieties of handles, but in the illustration marked F perhaps the simplest of all is shown. It is rolled out of a thin cylinder, and modeled by altering the pressure of the hand while it moves backwards and forwards in the process. We shall find it best to use the ball of the thumb for varying the pressure, for if the fingers are used there is a difficulty in preventing the



A HAND-BELL



A MATCH-HOLDER

appearance of ugly grooves across the roll. The length of the handle should be in good proportion to the bell. At the thinner end we should leave a small piece of material equal in diameter to that of a lead pencil, or less if the size of the handle will not admit of this. Bore a hole through the top of the bell, and pass the small end through. The projecting piece is then pressed down on the inside as at G. A few deft strokes with the thumb will unite the two parts.

We shall probably find the match-holders illustrated the most interesting and effective models yet given. Of course, they are only models, and are not intended for practical use, but in them there is much that can be learnt of the art of modeling.

To get the best results, there must be shown taste and feeling in the proportion of the parts, and the whole must be brought to a nice degree of finish. Each model consists of a tray, to which is attached the cup for matches, and each is made in two parts. Let us take number 1 first. The base is square, and it has edges at right angles to it. These edges are themselves curved. It is formed from the flat disk of the earlier exercises. Make the disk in the manner already described, taking care that the edges are pressed out quite thin. It is best to do the thinning out while the disk is revolved between the fingers and thumbs. Now bend up one edge, taking one of the four divisions, which we call seg-

ments, see sketch B, and this will give the appearance as shown in the little sketch at A. The corners may be shaped by gentle pressure of the little finger between each two edges as they are turned up into their positions. The cup for the matches is made in exactly the same way as the bell part of the second model, with this difference—that the top edge is prevented from spreading outwards while the hole is being made. In joining the cup to the tray, the cup is pressed on the raised portion of the centre of the tray, and the two are united by smoothly stroking the two round with the forefinger at their place of contact.

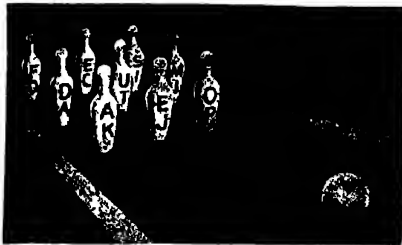
The second match-holder is more difficult, for from the circular disk six equal turned-up edges have to be made to form the tray. This will give what is called a hexagonal shape, as shown at D. If we are doubtful of being able to bend the six edges truly without guiding lines, as at C, we may mark on our disk the hexagon, as shown at D. After the edges are turned up, each one is bent slightly inwards. The tray is now ready for the cup. This is made in a similar manner to that of the first model.

At E we can see the shape to which it should be brought, and the top may be either left plain or scalloped, as in the photograph. The scalloping is done by pinching out the six divisions to the shape, as shown in the sketch plan marked F.

A WORD GAME WITH SKITTLES

AN interesting word game can be played with skittles or ninepins. We print on each skittle, with either ink or chalk, letters of the alphabet, no letter appearing twice on the same skittle. It is wise in writing the letters on the skittles to give rarely-occurring letters, like q, x, z, only once, and to make up the necessary number of letters with those that are more often used.

When the skittles are ready, we stand them up in three rows, as shown in the picture, the skittles being about six inches apart, and the rows also six inches apart. The distance between our skittles and rows must depend on the size of the ball. Six inches is about the right spacing for a ball the size of a tennis ball. Then we take the two balls, and, from a distance of about twelve



SKITTLES ARRANGED FOR PLAY

feet, we see how many ninepins we can knock over. Now we have to see what letters are on the ninepins that we have knocked down, and from these letters make up words, not using any letter more than once. Sometimes

we shall find that we can scarcely make one word, while at another time we shall be able to make a great many. In making the letters on the skittles, we should see that there is at least one vowel on each skittle, or we shall find that we cannot do much. Every letter of the alphabet should be given at least once, but the additional number required to make up four on each side, may be any letters, so if we like we can give three or four a's, or e's, and so on. The player who makes most words in a given time wins the game.

A CANDLESTICK FROM A GLASS OF WATER

A GLASS of water would not strike one as being a very suitable holder for a lighted candle, and yet by a simple arrangement it may be made into quite a serviceable candlestick.

The glass should have water poured into it for about three-quarters of its depth. A

piece of an ordinary wax candle is then taken, and a nail stuck into its lower end in the same line with the body of the candle. The nail is for ballast, and in choosing it care should be taken that the nail is of such a thickness and weight as to cause the candle to float with a quarter of an inch above the water-line.

STORY-DICTIONARY IN ENGLISH & FRENCH

DICTIONARY

Accents means tones.
Accosted means went up to and spoke to.
Affigé means afflicted, grieved.
Astounded means amazed, astonished.
Banish means to drive away.
Compelled means forced, made.
Concerned means disturbed, troubled.
Délire means delirium.
Diffidently means timidly, bashfully.
En guise de means by way of.
Enthusiastic means excited about something that pleases us very much.
Exquisite means choice, fine.
Extinguished means put out.
Habitait is the past of **habiter**, to dwell, to live in.
Incessantly means constantly, without ceasing.
Induce means persuade.
L'avoir tenu à l'écart means, literally, to have held him out of the way.
Légère means light.
Melody means tune.
Penetrated means made its way into.
Rapprocher means to bring together.
Raves means speaks wildly and excitedly.
Reproaches means blames, finds fault with.
Respond means to reply. To respond to applause is to play a piece over again.
S'échappent is the present of **s'échapper**, to slip out.
Se dirigeaient is the past of **se diriger**, to direct or guide.
Soothe means to soften, to ease.
Tout à coup means, literally, all at a blow.
Vient rompre means comes to break.
Virtuose means virtuoso, or artiste.

THE LOVE OF A BROTHER

The great violinist bowed his thanks to the *enthusiastic* audience and ran down the platform steps. The door swung to behind him, but through it came the sound of applause so persistent that it almost *compelled* him to *respond*.
 But he shook his head. "I'm too tired," he declared, "to play another note."
 As he stepped into his motor, a boy *accosted* him.
 "I beg your pardon, sir," he said *diffidently*. "But could you spare a few minutes to play something to my little brother?"
 The man looked *astounded*.
 "He's very ill," explained the boy. "He doesn't even know us now, but he's so grieved at missing your concert that he seems unable to *banish* it from his mind. He *raves* about it *incessantly*, and *reproaches* us for keeping him away. The doctor says he must have sleep or he will die, and I thought that if I could *induce* you to play to him just a little, it might *soothe* him. He's mad about the violin. . . . Mother said you'd never come."
 "But you had more faith in me?" said the violinist.
 "Where do you live?"
 The boy told him, and in a few minutes they were on their way to the house where the sick boy lay.
 At one of the windows a light shone.
 "That's the room," said the boy, as they paused for a moment in the little garden.
 The man did not answer, and the boy slipped away. For a while there was silence, and then suddenly the stillness was broken by an *exquisite melody*. Note by note it fell, till the air was flooded with its sweetness. It *penetrated* the sick-room, and brought joy and peace to the little sufferer; the restlessness ceased, and the tired eyelids drooped till at last they closed in a deep sleep.
 The man in the garden below watched till the curtains were softly drawn and the lights *extinguished*, then he put his violin back into its case and vanished in the darkness.

L'AMOUR D'UN FRÈRE

Le grand violiniste salua *en guise de remerciements* l'auditoire enthousiasmé, puis descendit l'escalier de la scène en courant. La porte se referma sur lui, laissant entendre des applaudissements si persistants qu'ils l'obligèrent presque à répondre.
 Mais il secoua la tête. "Je suis trop fatigué," déclara-t-il, "pour jouer une note de plus."
 Comme il montait dans son automobile un petit garçon l'accosta. "Excusez-moi, monsieur," dit-il timidement, "mais pouvez-vous disposer de quelques minutes pour jouer quelque chose à mon petit frère?"
 Le violoniste parut abasourdi.
 "Il est très malade," expliqua le petit garçon. "Il ne nous reconnaît même pas maintenant, mais il est si *affligé* d'avoir manqué votre concert qu'il ne peut en bannir l'idée de sa tête. Il en parle *incessamment* dans son *délire* et nous reproche de *l'avoir tenu à l'écart*. Le docteur dit qu'il lui faut du sommeil ou, sinon, il mourra, et j'ai pensé que si je pouvais vous décider à lui jouer quelque chose, les *accents* de votre violon le calmeraient. Ah! il est fou de ce violon! . . . Ma mère disait que vous ne viendriez jamais."
 "Mais toi, tu as eu plus de foi en moi?" répondit le violoniste.
 "Où demeures-tu?"
 Le petit garçon lui dit où il *habitait*, et quelques minutes après ils *se dirigeaient* vers la maison du jeune malade. Une lumière brillait à l'une des fenêtres. "Voilà la chambre!" dit le petit garçon, en s'arrêtant dans le jardin.
 Le *virtuose* ne répondit rien, et le petit garçon s'esquiva. *Tout à coup* une douce mélodie *vient rompre* le silence de la nuit. Les notes *s'échappent* les unes après les autres, remplissant l'air de leur charme. Elles pénètrent dans la chambre, apportant la joie et la paix au jeune patient; l'agitation cesse, et les paupières languissantes de l'enfant se ferment enfin sous l'action d'un profond sommeil.
 L'artiste dont l'œil était resté fixé sur la fenêtre voit une main *légère* en *rapprocher* les rideaux et la lumière s'éteindre, alors il replace son violon dans la boîte, et disparaît.

HINTS AND TRICKS FOR ODD MOMENTS

THE MYSTERIOUS CUBES

HERE is a curious design. Let us look carefully at it, and say whether we can see three cubes with their right-hand sides hidden and then left-hand sides showing black, or three cubes with their left-hand sides hidden and their right-hand sides showing black. In other words, are two cubes resting on one cube, or is one cube resting on two? While we are looking at the picture and trying to answer the questions, we shall probably get very mixed in our minds, for at first the cubes will seem to be in one position and then they will suddenly seem to change their position.



A TOY TO DISGUISE THE VOICE

A SIMPLE little instrument can be made out of a piece of bamboo, which will enable us to disguise our voice, so that our friends will not recognize it. We take a piece of bamboo about the thickness of a walking-stick, and three or four inches long, and remove any pith there may be inside. Then we cut a notch at each end, on opposite sides of the bamboo, as shown in the picture. Over each end of the bamboo we stretch tightly a piece of thin tracing paper. Then, with a large pin, we pick a hole in each piece of tracing paper. The instrument is now ready, and we may begin our experiments upon our friends.



A LITTLE FOUNTAIN IN A JAR

THIS picture shows how we can make a little fountain in an inverted glass jar. Any kind of glass jar will do - one in which we buy pickles or jam, for instance. We take a small bottle about half the height of the jar, and fill it about three-quarters full of water. Then we cork it well with a cork in which we have previously bored a hole. Through the hole we pass a glass tube long enough to reach nearly to the bottom of the bottle. About an inch of the tube should project above the cork, and we should seal the cork to the bottle all around with soap or wax, so that no air can get in. In a plate or tray we place several layers of wet blotting-paper, and stand the bottle in the middle. Then we take the glass jar and, warming it well, place it mouth downwards over the bottle. In a few minutes the air in the jar, which was warm, will get cool and so take up less room, thereupon a small



jet of water will at once spurt from the tube of the little bottle.

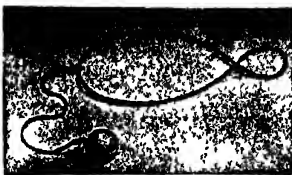
A DIFFICULT DRAWING TRICK

THERE is a drawing trick which seems simple, but is very difficult. Let us take a book or board, and place on it a sheet of paper. Then, holding the board with the paper horizontally, let us stand immediately in front of a looking-glass, and, looking in the glass, try to draw on the paper a square and its diagonals. Of course, we must not look at the paper itself or the pencil while drawing, but only at the reflections in the looking-glass. It is surprising how difficult it is to get the lines at the right angles.



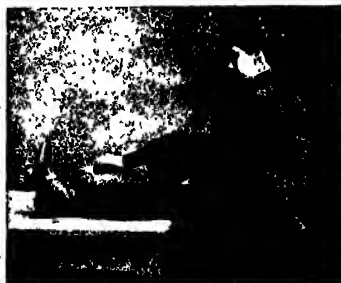
A HOME-MADE CUP AND BALL

IT is quite easy to make a toy that will answer the purpose of the well-known cup and ball. We take a piece of wire about two feet long, and bend it as shown in the picture. Then we take any ordinary ball, or, if a ball is not available, make one out of anything that is handy, and tie this to the wire with a piece of flexible string about a foot and a half long. The toy is then ready for use, and the game is to hold the wire by the handle, and see how many times we can swing the ball through the loop without letting it touch the wire. Any number of players can join in.

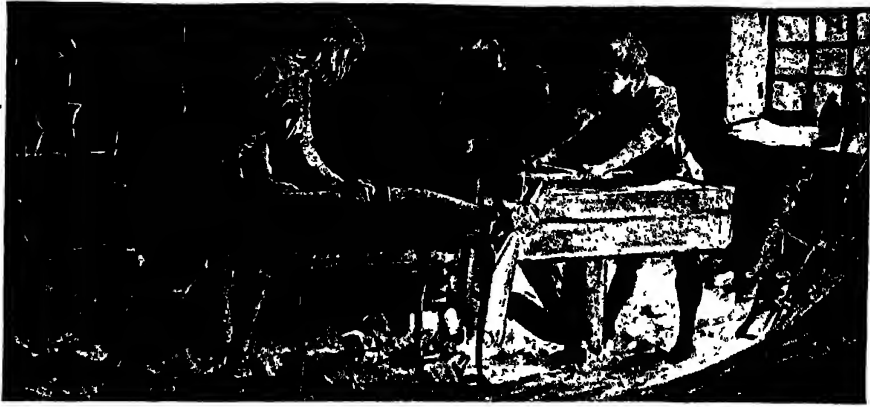


A LEG TRICK

THERE are many simple tricks for boys, which seem quite easy to do, but which, when attempted, prove to be anything but easy. Let us put our leg on the table in the manner shown in the picture, taking care that our heel and the back of our knee are both touching the table. And then let us try to untie our shoelace.



CONTINUED ON PAGE 6277.



Chippendale the carpenter at work, making one of the tables which have made his name famous.

MAKERS OF BEAUTIFUL THINGS

THREE WORKMEN WHOSE WORK LIVES AFTER THEM

WE have all heard people say of some piece of furniture, "That is real Chippendale!" It is only children, the great questioners of the world, who dare say, "What do you mean by real Chippendale?" They are answered, "It means that this furniture was made by Chippendale"; or "It is furniture made in what is known as the Chippendale period." But if a child goes on to ask, "Who was Chippendale, and what was the Chippendale period?" he may cause his elders some little difficulty.

Very often when we speak of an article of furniture which we believe to have been made in the eighteenth century, we call it "Chippendale," believing it to belong to the so-called Chippendale period. But we are in error in doing so, for the real Chippendale period was the time of Chippendale's life and work, and only professional dealers in old furniture, or those who make furniture their special hobby, can tell when we are right in so describing our treasures.

There is a good story about Homer. A puzzle-headed scholar, who had been studying long and hard to find

(CONTINUED FROM 617)



out whether the great poet really wrote the work which made him immortal, put it in this way: "Well, you see, the poem was not really written by Homer but by another chap of the same name!" Chippendale, who gets credit for work he never did, is to the collector of beautiful furniture very much what Homer is to the lover of literature. He looms out of the past as a great name, doing splendid work himself, and becoming, as it were, the father of most of the good work of the same sort which followed.

Furniture is not all of life, but it plays an important part in our home education. To live all our days among ugly furniture has a lowering tendency upon the mind. It debases our taste. We grow accustomed to the sight of ugly, inartistic things, and do not appreciate anything better.

This spirit of ignorance and indifference prevailed with regard to the entire home until the great artist, William Morris, set to work to reform taste, and make the home beautiful. Chippendale was an earlier Morris, in a smaller way, and his work was a miracle. Why should one little, un-

known man declare that all the furniture being made, whether for the rich or the poor, was bad, common, trashy? What would happen to a little tailor, or some poor dressmaker, who tried to do the same thing to-day in regard to clothes? Chippendale had an artistic soul, and he must have had enormous courage.

Furniture for English homes had

We know nothing about his private career, not even the dates of his birth and death. All we know about him personally is that he was a native of Worcestershire, and that he went to London some time before 1750, and set up in business as a cabinet-maker and upholsterer in St. Martin's Lane, and that he died in the year 1779. He began to

make furniture in a new way. He did away with the stuffy upholstery for chairs, and made them with open backs; strong but handsome. He gave them true beauty by making them for use as well as for ornament.

Chippendale set his face against the ugly furniture with which the houses of the rich were packed. He carved chairs which could be sat upon; tables which could be used with comfort; sideboards which were really useful as well as beautiful.

And Chippendale's furniture was a tremendous success. It is wonderful that so great a change should have been welcomed in England as it was. If a king or some leader of fashion had ordered furniture of this type, it would have been easier to understand its success;



THE CORNER OF AN ADAM ROOM

undergone many changes before the day of Chippendale and his school. The Saxon style was barbarous and rough; the Norman was elaborate and heavy; various Continental styles were blended into one for another fashion, with the result that all the original grace and beauty were lost, and only bad, jumbled copies remained. Chippendale found English furniture of this sort, and he set himself to reform the public taste.

but here was a quite unknown man, forsaking all the old fashions, and creating a style for himself, delicate, carefully carved, and sometimes very elaborate.

Chippendale seems to have made a great success in business but he was not satisfied with that. He was not content to know that the houses into which his furniture went were beautiful. This cabinet-maker, with an artist's mind, set out on a mission to convert other cabinet-

makers and their patrons. In 1752 he wrote a book on his trade. It taught cabinet-makers how to make beautiful furniture, and it taught others to respect and admire such work. Many of Chippendale's designs were included in the book. Five years afterwards a second edition of the book was published, and three years after that a third appeared. In this third edition, however, he unfortunately allowed drawings and designs by other people to appear, and his high reputation suffered from these. Probably it suffered a good deal more from a book of forgeries which was published after his death. In spite of this, however, Chippendale had a very great influence for good. A large number of his books were sold and studied, and they helped to change the whole art and style of furniture-making.

We may have heard of an "Adam house," or of an "Adam fireplace," or "Adam furniture." Those of us who have troubled our minds in the matter know that Robert Adam was an architect, not a furniture-maker. None the less, Robert Adam was one of the great figures in the movement for the reform of the English home. He was the son of a successful architect, and was born in Scotland in 1728. He studied at Edinburgh University and in Italy, and he had three brothers almost as gifted as himself. These were the men who built that part of London which, lying between the Strand and the Thames, was called the Adelphi. They built some of the finest houses in

London, and many in other parts of the country.

The point in Robert Adam's career is his skill in making beautiful the inside of houses. It did not satisfy the brothers merely to build a house which was handsome from the outside. They designed all sorts of beautiful tables and chairs, sideboards, fireplaces, book-cases,



THE CORNER OF A SHERATON ROOM

brackets, candelabra, pedestals, clock-cases, mirror frames, and so on. They designed plate and carriages; they even designed a Sedan chair for Queen Charlotte. They refined every branch of domestic art that they touched, and as they were among the first architects to make fine large windows to admit light and air, we, who know the great value of sunshine and pure air to us, should feel especially grateful to them.

With such a lead as Chippendale and the Adam brothers had given the country, it is hard to understand why afterwards there were so many shoddy homes in

only the furniture expert can distinguish their furniture from others of their time.

George Hepplewhite died ten years later than Chippendale, and, as he carried on business in London, they may have known one another. Hepplewhite is believed to have made a good deal of the fine painted furniture which is prized by collectors, but we usually think of him as a maker of furniture inlaid with beautiful woods.

All we know about William Ince and Thomas Mayhew is that they also lived in London in the eighteenth century, that they were partners, and that they published between them a book of designs. Of the two, Ince was the better cabinet-maker, and although his furniture



A CORNER OF A CHIPPENDALE ROOM

England, for the good work spread far and wide, and many artists in furniture now appeared. There were Hepplewhite, Ince, and Mayhew, among others, but

is more slightly built, it is sometimes mistaken for Chippendale.

Another maker of furniture who also lived in the eighteenth century, and one

whose name is better known to us than anyone of the three, was Thomas Sheraton, who was born at Stockton-on-Tees in 1751, and died in London in 1806. He first came into prominence in his native town by a book on religion. In his first book he described himself as a mechanic, though he was really a carpenter and furniture-maker. The



A Sheraton Clock

strange thing is that, as a furniture-maker, he was not successful. He had splendid ideas, but could not carry them out. He could design and teach others, but his proper work was not the actual making of the furniture which has made his name famous. He gave up furniture-making, and at thirty-nine removed to London, where he at once started to publish works on furniture-making. He had studied Chippendale, and declared that, while that excellent man's designs were admirable for the time in which he lived, they were now out of date. He little dreamed what later generations would think of Chippendale furniture.

Sheraton was wrong in his judgment as to Chippendale, but he was right in his judgment as to how furniture should be made in his own day. He was one of those wonderful men who do great things without formal education. He was by nature an artist, and he taught himself drawing and geometry, and, thus equipped, he set out to teach the world by means of books that he published. He cried out for still greater simplicity of design, a more severe beauty than

Chippendale's, and a style far removed, of course, from that which Chippendale's had overthrown. In furniture, he said, we must have usefulness, not attempts at beauty alone, if the lines that we follow are sound, beauty is bound to result. It is harder, he declared, to reach successful simplicity than the highest development of the fanciful French style which was then in fashion. All artists agree that he was right, and to-day Sheraton furniture is very highly prized—that is, furniture made from Sheraton's designs. The pity is that Sheraton's books were never a success, from the money point of view. He died in poverty, yet a good suite of his furniture to-day would sell for enough money to have kept him in plenty all his life.

These men were the chief of those who first strove in England to make the home beautiful. They laid good foundation, upon which careful technical artists have built ever since. Why, then, the return to shoddy ugly furniture? Perhaps it was through the introduction of machinery. Population increased, and huge supplies of furniture were needed. In the factory, where machines did the work which careful craftsmen once did by hand, it was impossible to pay the same artistic, loving attention to work. The older men had only a few persons in their employ, and could oversee every bit of work done. There was no hurry, no rushing. The factory with its machinery altered that,



Chippendale Bedposts

and the work suffered. In the second half of the nineteenth century, however, a revival of interest in the art of furniture-making set in.

In this country a renewed interest in furniture seems to have been aroused when travelers and dealers in antiques began to bring from Europe some of the beautiful things that they found for sale over there. This furniture was copied by the designers employed by furniture manufacturers, models were made from it to fit our needs, and there is now no reason why even the simplest home should be disfigured by ugly things.

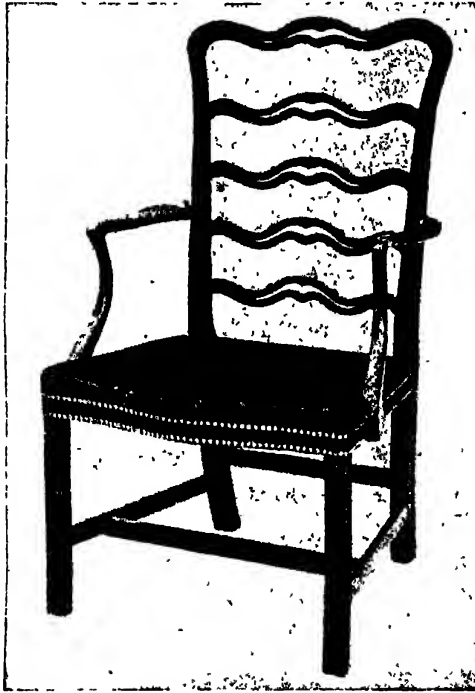
In this country we had no great furniture-makers whose names stand out like those of the men of whom we have been reading, nevertheless it is a mistake to think that there was no fine furniture made here in colonial days.

When the first settlers came they had to be content with the simplest benches, tables and cupboards, but we must remember that at that time the same thing was true of the great majority of people who lived in the lands from which they came. In a short time, however, some of the best furniture made in England was brought over, for the houses of the governors, wealthy planters and men of note, but space in the ships of those days was very limited, and even in the houses of wealthy people much of the furniture was of home manufacture.

Probably the first simple furniture of the log houses of the pioneers was made by themselves. Blocks took the place of stools for the children when they gathered round the hearth. An axe-hewn plank, laid on trestles, did duty for a table. Bedsteads were made of poles and the sides lashed together with rope. But these days soon passed. No sooner had

the settler been able to make a water-tight house than he attempted to make better things. Home-made rush-seated chairs, carved chests made from hand-hewn lumber, and well made tables, gave added comfort to the homes of the pioneers. Besides there were carpenters and cabinet-makers among the settlers, who used their skill in supplying the needs of the communities in which they lived. Indeed many men who were not cabinet-makers, but whose fingers had become deft at other work, and who loved beauty, made furniture for themselves that was

very creditable in shape and finish. For instance, this writer has seen a handsome desk that was made by a weaver, in the end of the eighteenth century, and has since that time been in the possession of his descendants. The greater part of the colonial furniture, however, was made by cabinet-makers or by carpenters who copied the new styles of furniture that were brought over from Europe, in wood from the beautiful trees, that were felled in the forests around them.



Courtesy Metropolitan Museum of Art.

AN EIGHTEENTH CENTURY CHAIR

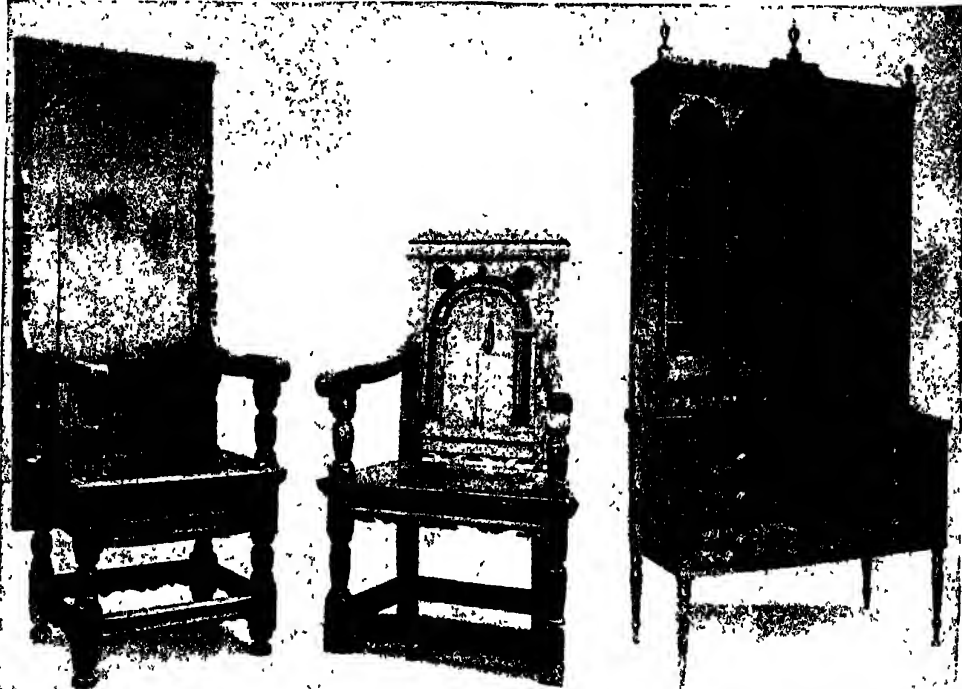
Many of these colonial furniture-makers had not the tools or the skill to give to the things that they made the extreme beauty of line that we find in the best furniture that came from abroad. Most of them were not able to cross the fine line that divides what we call good from what we call excellent. Their tables and chairs and cupboards were just a little heavier in make and clumsier in outline than those from which they took their designs. Nevertheless men and women now treasure, with pride, antique furniture which they suppose to have been brought from the Old World, but which really was made in some village in New England or in the South.

The colonial cabinet-makers were espe-

cially successful in making large pieces that were difficult to import. Handsome highboys, in which the wardrobes of a whole family of children could be stored away, were almost peculiar to this country, and when you see one you may be almost sure that it is of colonial make. The pictures on these two pages give an idea of the best type of furniture made in the seventeenth and eighteenth centuries.

We really know nothing of the lives of the men who made these things. In fact,

of Louis XIV, Louis XV and Louis XVI gives us an idea of the houses of the nobles who lived in the luxurious reigns of these monarchs. There are carved dower chests from Central Europe. There is a large room with old carved furniture made in England in Tudor times and in the reign of James I, and this is of great interest to us, for it shows us how the old homes of our ancestors were furnished at the time they left them. Then there is a large hall filled with fur-



These chairs were made in this country in the seventeenth century, and may well be compared with some of the old carved furniture made in England in Tudor days. The beautiful desk was also made in this country, about the year 1800. Chairs and desk are now in the Metropolitan Museum of Art in New York.

the only cabinet-makers whose names we know are David Phyffe, who has been called the American Chippendale, and possibly one or two more. But not only the furniture that these men made, but fine doorways, handsome chimneypieces, and graceful, curving stairways into which he had put all his love of good work, were the pride and joy of many a village Sheraton or Adam, and are now the pride of their owners, especially if they still belong to the families for whom they were built.

There is a very fine collection of old furniture in the Metropolitan Museum of Art. Rooms are furnished in Chippendale furniture, in Sheraton and in Adam furniture. French furniture of the time

niture made in America in the centuries of which we have been speaking, and we may study it ourselves and compare it with the furniture made in Europe. There are highboys and lowboys, tables, desks and chairs, cabinets and carved chests, and chests of drawers. The pictures on these two pages are photographs of furniture in this collection. Other collections of furniture, some of domestic manufacture, and some brought from abroad, are to be found in the colonial houses, throughout the country, which have been turned into museums. The mission furniture with simple lines, that is so much used nowadays, is copied from the furniture used in the Spanish Missions.

THE NEXT STORY OF MEN AND WOMEN IS ON PAGE 6249.

THE GREATEST MONUMENT ON THE EARTH



The Pyramids, 6,000 years old, standing in the sands as when Abraham must have seen them.



The six-mile avenue of acacia trees leading from outside Cairo to the Pyramids.

Upper picture copyright by Underwood and Underwood.

THE BOOK OF ALL COUNTRIES



Old Cairo, with the tombs of the Caliphs, and the Citadel in the distance.

THE GREAT SIGHTS OF EGYPT

THE world has made haste since Pharaoh died, but nothing more wonderful has happened under the sun than the change by which we may sit reading THE BOOK OF KNOWLEDGE in New York on Monday, before another Monday be in London, and on the following Saturday may cross the desert at Thebes, and walk among the Tombs of the Kings. In one week we may walk on the ashes of two dead empires; we may look on the ruins of Rome and walk among the ruins of Egypt. Between one Sunday and another we may sit in the shadows that fall from all that is left of the palaces of Cæsar and the temples of Pharaoh. We go six thousand years back in six days.

It is strange to arrive after so swift a journey from New York in such an old corner of the world as Port Said, where the traveler for Cairo parts from the traveler for India. The ship sails on its way to India, up the Suez Canal into the Red Sea. The passenger for Egypt takes train for Cairo, and the journey takes about four hours. And as he goes he catches glimpses of the canal here and there, and peeps of some of the queer corners of Egypt. At last, less than two weeks after leaving New York, he is in Cairo.

CONTINUED FROM 6105



Nothing that the traveler has ever seen is quite like Cairo—if he has never been to India, or Damascus, or Constantinople. The color of Cairo is something that no one ever forgets. The panorama of human life which never ends; the tens of thousands, hundreds of thousands, of lives which nothing seems ever to perturb; the glow of the city in the sun from the height of the Citadel, with its miles of domes and minarets; and the river which brings life to Egypt winding in the background; and far beyond, ten miles and more from where he stands, the Pyramids and the desert make an abiding impression on the traveler's mind.

Cairo itself is wonderful. Only a great artist or a great writer could hope to give you some suggestion of its color and its humanity. You would not be surprised if you were told that in those bulrushes Pharaoh's daughter found Moses; your surprise would be that Moses was not there. You may fancy that yonder Arabs in the desert are Joseph's brethren; for all the change that has taken place they well might be.

Hawks fly past you as you walk in the street, buffaloes draw carts and ploughs, white donkeys and black ones

with blue necklaces bear half the burdens of the town. The faithful Mohammedan plays in the field; the unfaithful cries "Backsheesh!" as you pass. The women hide their faces behind thick veils; the children alone seem even as you and I.

THE GORGEOUS BAZAARS PACKED FROM MORNING TILL NIGHT

The wonderful bazaars can never be described. They are packed with things to eat and things to wear. A host of busy folk, tailors, jewelers, polishers, shoemakers, coffee-grinders work in the doorways or the open shop fronts. The ancient streets of this old part of the town are full of busy life and packed with gorgeous color. Even the pavements of the dirty streets provide a working place for merchants.

At every turn some little group is busy roasting chestnuts on the curbstone even at midnight; making coffee on the pavement for the passers-by; displaying their rings of bread and plates of strange confections on the ground.

Hear the cackling hens in the shops, the stray sheep and goats in the busy streets. *Feel* the misery of these happy people. Smell their streets and shops. Escape, if you can, from the heap of fish in that window, from the basket of onions in this, from the carcasses in that butcher's shop. Turn the corner and see their tobacco shops, the damtiest imaginable. Step inside their mosques; put your feet into yellow sandals and see them at their prayers. Climb the steep hill to the Citadel and see the glory of Cairo, the wonderful, unmatched, and unforgettable panorama of a hundred square miles of fertile plain and yellow sand.

THE SCENE UPON WHICH THE SUN HAS SET FOR CENTURIES AND CENTURIES

See Father Nile flowing, as he has flowed ten thousand years, still bearing a prehistoric craft past great palaces and banks lined with palms; with the dim background of the distant desert rising against the sky, the great Pyramids of Ghizeh, ten miles distant, plainly seen, and those of Sakkara, more distant still, looming beyond.

Stand here on the Citadel and watch the sunset over it all, and remember that the sun has set over it for more centuries than you can count years, and that in the plain lying before you empires have been born, empires have been lost.

People the arena with great people of antiquity of whom we have learned—Julius Cæsar, Mark Antony, Cleopatra, Moses, and the Pharaohs; and then walk slowly down the hill, see the human relics of this greatness, and wonder what life and the world means. Take a carriage at the bottom, and drive ten miles. Three miles bring you to an avenue lined with trees—"the avenue that never ends," and about you are oranges, bananas, and dates in the gardens, and buffaloes at work in the fields, led by men in long blue robes.

THE GREAT SHADOW THAT CREEPS ACROSS THE SAND

Ahead, just in front of you, at the bottom of the way, stand the Pyramids. A mile goes past, and then another, and another, and still, in front of you, these great things rise. Then at last the desert, the greatest structures that were ever built in stone, and the strange, wonderful Sphinx.

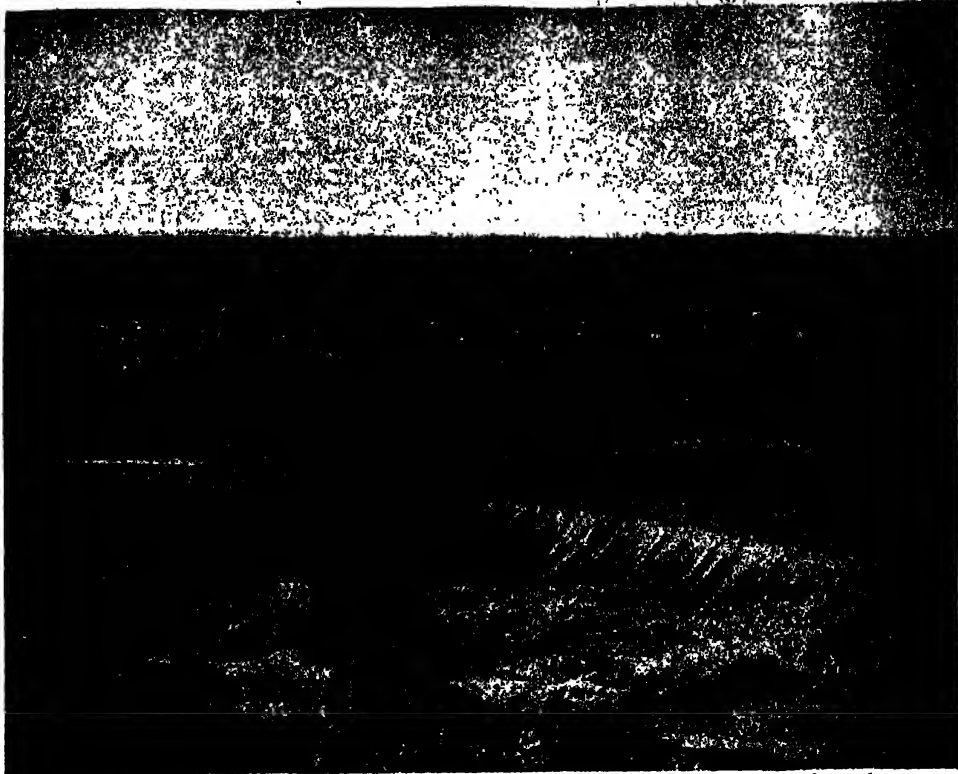
We are at the Pyramids, one of the most famous places in all the earth, and we watch the shadow of the Great Pyramid—the greatest of the three—creep along the sand. The sun shines down on it to-day as it shone on it when Abraham saw it, and Moses was brought up almost beneath its shade. The moon looks down on it to-night as on that night when a mother brought her Child down into Egypt to flee from the wrath of Herod.

THE USELESS LABOR OF A HUNDRED THOUSAND SLAVES

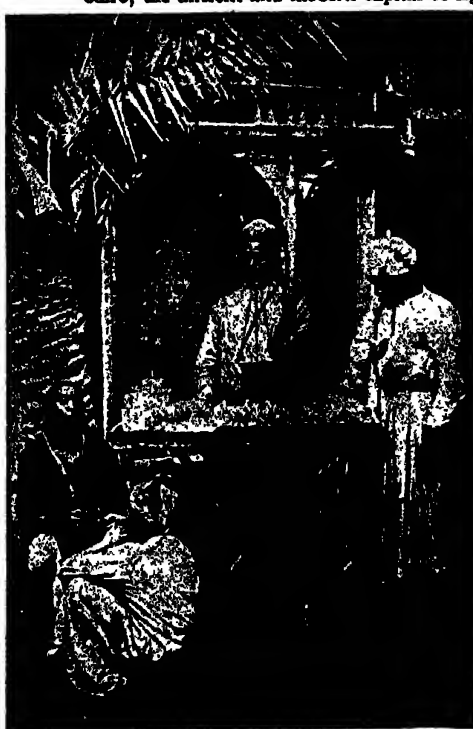
The Great Pyramid is the greatest monument ever set up on the earth, and the only monument on the face of the earth which looks to-day, at any rate from a distance, almost exactly as it must have looked 6,000 years ago. We sit in the sand and gaze at it with wonder.

For twenty years a hundred thousand slaves worked to build this single pyramid, which is the greatest of the three that rise from the sand near Cairo, and was built to hold the dead body of a king. It is nearly three times as large as St. Peter's in Rome, and fifty feet higher. Its foundations are set in thirteen acres of sand, and the stone it contains is nearly 90,000,000 cubic feet, or enough to make a pathway, a foot wide, two-thirds of the distance round the earth.

CAIRO AND HER STRANGE BAZAARS



Cairo, the ancient and modern capital of Egypt, with the Pyramids in the desert beyond.



A confectioner's and a fishmonger's shop in the famous bazaars in the old part of Cairo.

THE LIFE OF AN EGYPTIAN BOY



The great Arab university at Cairo, where thousands of boys study the Koran all day.



Arabs drawing water from the Nile with the schadouf, a sort of see-saw with buckets.

THE RIVER THAT GIVES LIFE TO EGYPT



CAMELS ON THE BANKS OF THE NILE AT ASSOUAN



WATER-CARRIERS FILLING THEIR SKIN BOTTLES FROM THE NILE

THE DARKNESS INSIDE THE GREAT PYRAMID

Six hundred miles up the Nile is the great Assouan Dam, which holds back enough water to make the desert of Egypt blossom as the rose, and this huge dam has just about a quarter of the quantity of stone that is piled up in the great pyramid!

It is hard to understand the feeling which leads the traveler to climb the pyramid. The climb is perilous and difficult. It takes hours, and the climber needs the help of two or three men. It is easier to persuade oneself to go inside, but he who has once been in will surely never wish to go again. A small hole, which faces toward the North Pole, leads into a long, low, descending passage, through which three Bedouins lead us into this dark and terrible place, and we fumble on hands and knees, and climb up slippery slopes, and walk along narrow ledges, and are slung through holes until the darkness and the weirdness are almost more than we can bear.

With a sigh of relief, we reach the little chamber in the heart of the Great Pyramid, with the tomb of the builder in the centre of the floor and with millions of tons of masonry above our heads—enough of it, men say, to have hidden away miles and miles of galleries such as we came through, and more than three thousand chambers such as this in which we stand.

THE RIDE TO THE PLAYGROUND OF MOSES

An overwhelming thought it is, a terrifying place it is to stand in, and we would give much for a breath of the air that lies hundreds of feet away beyond these dark winding passages. Our Arab guides know it, too, and this place and this moment they choose to extort from their victim as much money as he will unwillingly let go. And the traveler pays, takes up his candle, and gropes his painful way back to the desert and the sun.

He is glad to mount his camel, to ride quickly by the Sphinx, which, if he is wise, he will come again to see by moonlight; and on he rides, across twelve miles of sand to Memphis, through the groves of palms which rise perhaps from the playground of the little boy Moses, whose home was in Memphis in the days when it was a great city.

This is one of many wonderful rides that the traveler takes from Cairo, and always he comes back to Cairo as to another world.

But it is not Cairo, even with the Pyramids, which most moves the traveler in Egypt. He is loth to leave it, glad to come back to it, and never for a moment lets the spell of it go. But Cairo, after all has been said, is of this world, and there are great cosmopolitan cities elsewhere. It is when he leaves the train, which brought him from Cairo, at Luxor, and wanders through the ruins of the great structures of another time, that the traveler feels that he is in another world. The vastness of the halls and temples, the size of the columns and statues awes his mind; the sadness of their ruin oppresses his spirit.

THE RUINS OF AN ANCIENT CAPITAL

A few miles farther on lie the ruins of Thebes. We wander through them in the warm Egyptian sunlight, and try to imagine how the city looked when the buildings stood as their builders had left them, and the colossal statues gazed down on throngs of worshippers. Thousands of years have come and gone since they were built; many centuries have passed since they were overthrown and buried beneath the desert sand. The descendants of the men who built them dig down to find their ruins, and as we listen to the thud of pickaxes, and watch the plodding workmen at their task, we can fancy ourselves back in those far-off days when swarms of workmen toiled to raise the giant walls.

We fling our guide-books down, for we care nothing for the height of columns, or the size of halls, as we remember that here sat Rameses, that here came Alexander, that here was the heart of the world in an age of which his mind cannot even think, that the stones rising to the sky were placed there by the greatest builders that the world has ever known, thousands of years before the foundation stones of the Capitol, at Washington, were laid.

Across the river lie the mountains where the kings of Thebes made their tombs, like which there is no other tomb on earth. Think of the most impressive place where the mortal remains of a king of men can be laid—of the heart of Livingstone, in his own Africa; of Cheops, in

WHERE MOSES PLAYED AS A BOY



A desert oasis in which majestic palm trees look down upon mud houses.



The glory of the towering palms at Memphis, where Moses is said to have played.

HOW THE GREAT TEMPLES WERE BURIED



THE BEAUTIFUL TEMPLE HIDDEN IN THE EARTH FOR CENTURIES AT ESNEH

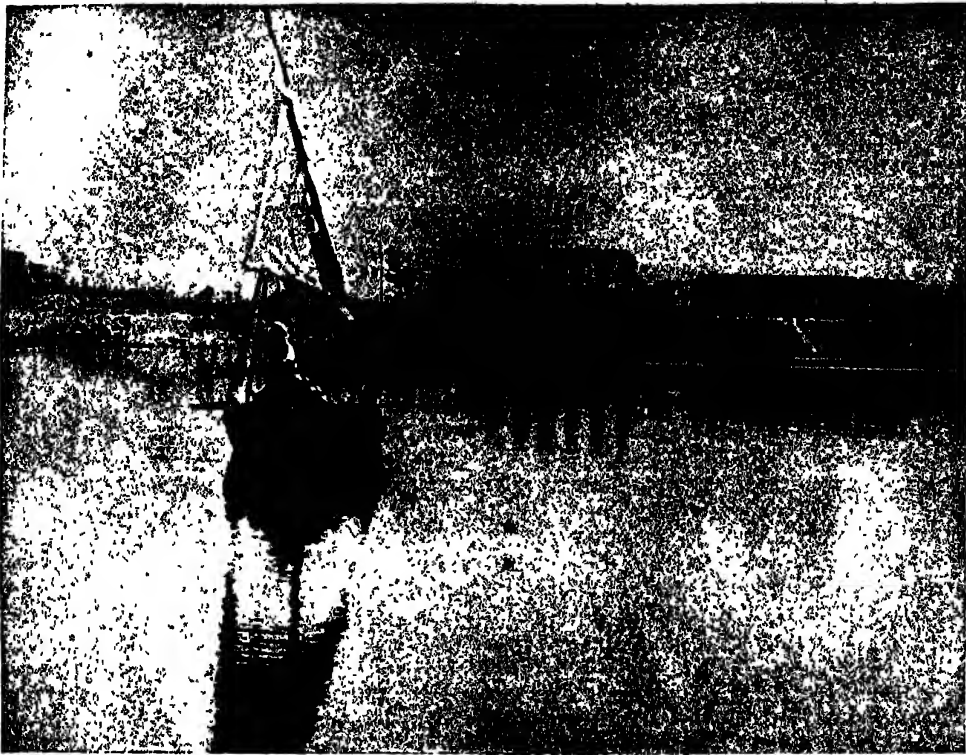
These pictures show how the temples of Egypt were buried in the earth and dug out again. The road outside the temple at the village of Esneh, on the Nile, is now level with the pathway seen at right of top picture, but when the temple was built the road must have been level with the floor, as below. Inside the temple has been excavated; outside is still covered by earth. The way in is down the steps.

THE MOUNTAINS IN WHICH THE KINGS OF EGYPT LAY FOR THOUSANDS OF YEARS



FOR CENTURIES THE KINGS OF EGYPT LAY HIDDEN FROM THE WORLD IN TOMBS CUT DEEP DOWN IN THESE MOUNTAINS. ONE DAY THE DREAMING OF THE WONDERS HIDDEN HERE UNTIL A TOMB WAS PIERCED ONE DAY BY THE ACCIDENTAL TUNNEL OF THE SEA.

WHERE THE KINGS OF EGYPT LIVED



The Nile at Luxor, once known as Thebes, the seat of the empire of the Pharaohs.



The splendid columns of the ruined Temple of Luxor, as they stand to-day.

the terrible loneliness of his Great Pyramid; of Cecil Rhodes, at the summit of the mountain from which he looked down upon a continent; of Mohammed at Medina; or Napoleon; of Washington in his country home; of Nelson, of Wellington, in the heart of the empire that they helped to build.

THE TOMB THREE THOUSAND YEARS OLD

And none of these resting-places of immortal men can be likened, for an impressiveness that is overwhelming, for a great silence that can be felt, to the graves of the dead kings of Egypt.

Hundreds of feet deep in the mountains, through chambers cut in the solid rock, with sculptured walls bearing the history of his life, as rich in color as if the paint had dried upon them yesterday, Amenophis II. lies in his coffin as his people left him there three thousand years ago. In a smaller chamber, among the dust on the ground, lies a beautiful woman, her black hair falling over her shoulders, who played, we are sure, with the princes in the king's palace 1,500 years before Jesus Christ was born.

From Luxor we take boat to Assouan, to see the great Nile dam, and at Assouan our boat turns round and sets our faces homeward. Six hundred miles down the Nile is Cairo, and slowly down the great river we go. Here on the banks as we pass is Egypt at home. Here are the mud huts of to-day; here are the broken temples of yesterday.

In no other place in the world can so much change, so many varied scenes, so many aspects of life itself, so many types of people, such an endless transformation of human and natural things pass in so short a time. It is like a cinematograph, throwing upon a screen, all in an hour, every kind of life in every part of the world in any age that has ever been.

THE VAST ETERNAL THROG THAT LIVES AND MOVES ON THE BANKS OF THE NILE

We sit on donkeys or on camels, or on the sunny decks of steamers, or stand in mud houses, or lie under palm trees, or rest in great temples, or look out from trains, and see this great world move past—a vast, eternal throng. If you turn to your map of Egypt, you will find, lost on the banks of the Nile among sugar-canes and palm trees, a place called Edfou. We have just left it, climbing to the height of its great temple, tramp-

ing its dusty streets, and parching with thirst at the very sight of its mud town.

In the background from our boat stands the temple as the Ptolemies left it. A dusty lane leads from the landing-stage to the mud-built town, with the minaret outstanding to remind us that the things of this world pass away. Women and girls are coming with their water-pots, which they carry on their heads as they did when these temple walls were built.

THE SIGHTS AND SOUNDS IN THE FIELDS OF EGYPT

At the riverside a group of women are busy washing their robes, and spreading them out on the rocks to dry. Behind them stand a dozen donkeys, with donkey-boys and dragonans, half a dozen boys asking for English books and one or two for backsheesh, and a motley crowd of folk—white, brown, and black—in black robes, white robes, and blue robes; in black turbans, white turbans, and blue turbans; and red fezzes.

In the shade of the hill sit four splendid Arabs. Over the hill come two camels, laden with stuff from the quarry where a dozen natives are excavating an ancient temple. In a moment the camels are lost in a cloud of dust, which comes and goes as if it were a speck in a hurricane, though the air is as calm as the Nile. Along the bank the shadoufs are working—the quaint and clumsy water-carrying instruments which still, as for thousands of years back, carry the waters of the Nile into the fields around. In these fields buffaloes are ploughing, sugar-cane is growing, palm trees rise in the distance; and beyond it all lies the range of mountains which never break.

As our boat leaves this stopping-place, an Egyptian gentleman, the Sheikh of his district, lands, amid the salaams of the people; the crew break out into the plaintive hymn which marks the setting off of every boat and its arrival; and our steamer looks ahead, to the sailing boats that look like poetry far up the placid Nile. And on, and on, and on we go, through the wheat-fields on one side and the desert on the other, with no sign of life save the naked men at the shadoufs, and now and then a mysterious figure in a flowing robe. It is as if all strife among men were dead, and peace and happiness for all had come.

CONTINUED ON PAGE 6221.

HOW 100,000 SLAVES SET UP A MOUNTAIN IN THE SANDS



The modern world has gazed with amazement at the Pyramids of Egypt, and wondered how such gigantic monuments could have been built in the days of the world's childhood. But we are almost sure that they were built as shown in this picture. When the first stones had been fixed in their place a bank was made up to the top, sloping down to the level of the ground. Up this slope the next great stones were dragged, and when these had been fixed the slope was carried to the top of them. So, as the pyramid rose, the sloping way rose too, until it became a wonderful road for thousands of slaves to walk along, dragging the granite behind them. The road was greased to make the dragging of the stones easier, and behind each stone were slaves with levers to help. By the time the pyramid was finished, this roadway must have been miles long. When at last the pyramid stood complete, and the final stone had been placed on the top, the inclined plane was taken away. It took 100,000 men thirty years to build this Great Pyramid.

The Book of STORIES



THE UNKNOWN HERO

ON the banks of the Rhine, just above the little town of Caub, is the castle of Jutta's Rock. Jutta was the beautiful sister of Philip, the lord of Caub, and she was queen of the tournament at Cologne when the German heroes rode the lists and showed their courage before the eyes of their ladies. No knight, however, carried her colors, though many wished to win that honor. None had been able to touch her heart, but her brother hoped that one of her suitors would win her by some striking act of bravery in the tournament.

But, famous as the warriors of Germany were for horsemanship and strength of arm, none was able to distinguish himself that day. A tall knight, with an English device inscribed on his shield, bore down every warrior who entered the lists against him.

All the ladies were deeply interested in the strange knight, and when Jutta saw his eyes fixed on her, her heart began to beat. The stranger won the prize, and, to the great joy of Jutta, he reined in his warhorse by the place where she sat.

"I love you!" he said. "Trust me! Give me the glove you wear and I will return with it in three months." "Cannot you stay?" said Jutta anxiously, giving him the glove.

"No, my dear lady," said the unknown knight. "I have come to Germany on a great enterprize,

and if I delay I shall fail."

He spurred on his horse and rode into the night. For three long months Lady Jutta hoped for her unknown hero's return, always refusing to let another knight carry her colors in the lists. Time passed, and still he did not come. Altogether for six months Jutta waited for news of her unknown lover. She heard that some English knights had been slain in a fight over the election of Richard of Cornwall as Emperor of Germany.

"He must have fallen in the fray," she kept saying, as the days went by. And at last she shut herself in her room, and refused to see anybody.

One afternoon the Emperor of Germany called to claim her hand in marriage. Jutta returned word through her brother that she had resolved to retire to a convent. But the emperor insisted that she should see him, and Jutta came slowly into the hall.

"Jutta," said the emperor, handing her a little white glove, "have you forgotten the poor English knight?"

The emperor raised his visor, and, with a cry of gladness, Jutta ran into his arms. Her hero was Richard of Cornwall, brother to King Henry III. of England! After a long struggle he had been crowned Emperor of Germany. He now came to share his high honors with the maiden whose heart he had won as an unknown knight, and Jutta was made Empress of Germany.

'THE FIGHT' WITH THE DRAGON

As the young knight rode through the streets of Rhodes, thousands of voices sang his praise. For behind him he dragged the lifeless body of the dreadful monster that had filled the land with terror and dismay.

"Open the gates," cried the crowd, leading the young knight to the monastery of the military monks called the Hospitallers of St. John. "He has killed the dragon!"

The gates were flung open, and the people followed the hero into the council chamber, where the Grand Master of the Hospitallers was sitting with the other officers of the Order.

"What is the meaning of this?" said the Grand Master, in a stern voice.

"I have killed the monster that made its den in the Chapel of the Three Kings of Cologne, and prevented pilgrims from visiting it," said the knight.

"My son," replied the Grand Master, still more sternly, "you have done great wrong. After five of our bravest knights lost their lives in trying to kill this dragon, I forbade any man of our Order to attempt the feat that you have rashly undertaken. You have disregarded my orders. Speak! What is the first duty of a knight of St. John?"

"Obedience," said the young Hospitaller, bowing his head with shame at the unexpected rebuke.

"You are a professed champion of our Lord, wearing the emblem of the Cross," exclaimed the Grand Master. "You have broken the law of your Order wilfully and rashly, and —"

"Not rashly, my father," interrupted the young knight. "Hear my story. I went to a craftsman of my native town, and got him to make a life-sized image of the dragon. Thus I placed in a field, and trained my horse to approach it, and taught my dogs to attack it only where its skin was thin and tender. I journeyed back to the chapel, and, finding that the monster was sallying out of its den and slaying and terrifying the country people, I resolved to fight it at once."

"You should have first asked leave," said the Grand Master.

"There was no time," replied the young knight. "Men were being killed every day. None could stand against

it. Formerly it had only come out at night, but now the terrible monster was grown so bold that at noon-day he feared not to attack the peasants in the fields. I found the dragon sunning itself on the ground beside the chapel, and set my dogs on it. Then I charged at the monster, and tried to pierce its body with my spear. But the weapon broke against its scaly hide. Then I attacked the angry dragon with my sword. This, too, broke in my hand, and I was thrown to the ground, and the horrible beast opened its jaws to devour me. But my dogs attacked the monster where the skin was unprotected by scales. Roaring with pain, the dragon turned from me and tried to drive away the dogs. Then I drove my broken sword up to the hilt in its body, and it fell to the ground, slain."

Moved by the young knight's story, the crowd made the council chamber ring with their applause. Even the Hospitallers were won by the modest air with which he related his wonderful achievement, and they begged that he should be given the crown of valor. But as the people were carrying the young knight in triumph through the hall, the Grand Master called for silence, and said:

"You have become the enemy of your Order. Take that holy cross from your breast, for you are no longer worthy of wearing it. It is the emblem of the spirit of Christian humility and obedience. You have slain the dragon in order to win idle glory, and a more terrible monster now lodges in your proud breast—the serpent of self-will, disobedience, and worldly pride."

The crowd raised a cry of protest, but the dragon-killer meekly obeyed his angry superior. Silently, and with downcast eyes, he took off the dress of his glorious Order, stooped and kissed the hand of the Grand Master, and slowly and sadly walked away with bowed head.

But as he reached the door the Grand Master called him back.

"Come, my son," he cried; "you have now won a harder battle than your fight with the dragon, for you have conquered yourself. Take back the Cross of the Hospitaller Knights. You have gained it by heroic meekness of soul!"

THE SONG THAT FOUND A KING



HOW BLONDEL, THE WANDERING MINSTREL, SANG OUTSIDE THE CASTLES OF EUROPE TO FIND HIS FRIEND THE KING

HAVING collected a debt that was owing to him at Durenstein, Black Hans, the moneylender, set out home in a state of wild alarm.

"Whatever shall I do," he muttered, "if those vile Crusaders attack me?"

The great Crusade in which King Richard of England had taken part had failed. Richard had strangely disappeared, and Europe was covered with fierce adventurers returning ragged, hungry, and penniless from the Holy Land. Travel had become dangerous, for one never knew when some broken soldier would spring out from under a bush and demand food or money at the point of the sword. This was why Black Hans looked uneasily around as he tramped along the high, rocky banks of the Danube. When a tree rustled his heart beat violently.

Suddenly a strange, wild figure came running towards him. Black Hans trembled as he drew his sword; but the

beggar laughed, and, approaching closer, held out his weapon for him to look at. It was only a simple lute such as minstrels used in those days to sing to.

The man himself was tall and young and handsome, with long, fair hair; but his cheeks were lean and worn, and his dress was a flutter of rags.

"My good sir," he said, taking off his cap with an air which would have been dignified in a lord, but was ridiculous in him, "I do not want to fight you or beg from you. At least," he added, "I only want to beg a little information. That will cost you nothing. Is there a castle near by where I could get food and lodging in return for a display of the gay science?"

"The gay science?" exclaimed Black Hans, looking at the miserable figure before him. "What is that?"

"Oh, you boors! You ignorant German boors!" cried the ragged minstrel angrily. "The gay science is the name of the new sweet poetry invented in sunny Provence. Have you never heard of Richard, the poet-king of England, who has made the gay science known from London to Palestine?"

"What about Richard of England?" said the moneylender suspiciously. "Are you looking for him?"

"What has a beggar like me in common with a king of England?" said the minstrel, with a laugh. "I am looking for food and lodging, my friend. Am I likely to get them about here?"

"Well, there's the Castle of Durenstein about a league up the river," said Black Hans sullenly. "But I doubt," he added, as he moved rapidly away, "if they want any of your new French fashions of singing and playing."

When the moneylender was out of sight, the minstrel threw his lute away and flung himself on the ground, under a tree, and covered his face in his hands and wept bitterly.

"My search is all in vain!" he moaned. "Richard, my Richard, I would give my life to find you and help to set you free! But it is impossible! You must have been shipwrecked on your way from Palestine, and the tale about a secret prison is a false report made by your foes to hurt your friends and waste their lives."

For a long time Blondel lay flat on

the ground, choking with sobs. He was a young knight of Picardy, who, like many other great lords of his time, had taken to the pleasant life of a high-born minstrel. In a tournament of song in Southern France he had met Richard, and won from him the prize for singing; and, instead of disliking Blondel for excelling him, the brave and large-hearted King of England had given him lands and made him his companion. They had lived together, composing songs in the new fashion and setting them to music and singing them to one another.

As Blondel met with an accident, he could not go with Richard to fight with him in the Holy Land; but when a rumor spread in Europe that the king had been captured and secretly imprisoned on his way back to England, the brave minstrel-knight resolved to venture his life in finding where his king was hidden.

"It's no use crying and moaning," he said at last, rising up and looking about for his lute. "Tears will not find his prison or unlock the gate. And, first of all, I must get some food, for I am well-nigh starved to death."

He had been wandering a long time since he set out from Picardy on his search, dressed in his brightest and gayest robes. Now his shoes were worn from his feet, and his fine attire was torn into tatters. In his own country the minstrel was always an honored guest, and had his seat at the lord's table and the best of food and lodging. Now as he went on he found that instead of being received honorably in the great halls of the castles as a minstrel-knight, he had to sink into kitchens, where his songs usually won for him a supper and a bed.

Walking along the narrow gorges through which the Danube foamed and roared, he came into the wide plain of Vienna.

There, where the great river widened, was the Castle of Durenstein, rising from the top of a hill and surrounded by a wall of rugged rocks. At the foot, by the bank of the river, was a little village. Blondel had enough money to buy some wine and bread at the inn in the village; then, refreshed by his meal, he wandered for some time around

THE SONG THAT FOUND A KING

the castle singing at the top of his voice.

In a low, dimly-lighted room in the castle-keep a tall, powerful man, with a finely-cut face and a head of auburn hair, was restlessly pacing up and down the room, talking passionately to himself.

"Two years! Two years!" he was saying bitterly. "And not a single man in all my dominions has tried to set me free! I shall go mad if I think much more about it. There's John, my

"Let me try my hand at the gay science again!"

He walked up and down his prison-cell, turning over phrases and fitting in rhymes, and at last he took up his lute and began to sing softly to himself these lines, which are still remembered as King Richard's:

Know, men of England, Anjou, and Tou-
raine,
And all my knights with noble hearts and
brave,



The Castle of Durenstein, where King Richard was imprisoned, as it appears to-day.

brother, and the Earl of Northumberland, and Longchamp and Pusey, whom I have loaded with honors and riches. Philip of France, too, who swore when he left Palestine that he would be my friend. They must know that the Duke of Austria is keeping me a prisoner against all the laws of God and man merely to obtain money. But will they give a penny to ransom me? Not they! They have got hold of my kingdom, and they mean to keep it, and they will let me die here like a rat in a hole."

For several minutes he looked moodily out of the narrow slit in the huge walls that served him as a window. Then on a sudden he laughed aloud, and said:

Your friendship, love, and duty now are vain
To free me from the bondage of a slave

Remote from consolation here I lie,
The wretched captive of a powerful foe,
And here in grief I languish till I die -
Die, and am buried where no man shall
know!

"That's a very good beginning," said Richard, recovering his gaiety. "I've learned a good deal about verse-making this year. If ever I should meet Blondel I do not think he will excel me again. Poor Blondel! I wonder what he is doing. Making love-songs for the fair ladies in Picardy, perhaps, but probably forgetting that he had ever a friend called Richard."

A fit of sadness again overcame the

imprisoned king, and he went to the narrow window slit and stared sorrowfully at the open country.

Suddenly he reeled back as though he had been struck.

Someone was singing below, someone he knew, and the sweet voice pierced his heart. Nearer and nearer it came, as the singer, clambering round the outer wall of the castle, gradually approached the narrow window of his room, where the king listened like a man in a dream.

The words of the song came clear and ringing on the evening air :

If you were housed in a hut in the vale,
And I were lodged on a hill on high,
Would you sing to me as the nightingale
Sings from a bush to a star in the sky ?

It was the first verse of a song which Richard and Blondel had composed together many years before. None but these two knew of it, and Blondel was singing it to help him to find his king. He had sung it outside hundreds of castles, in the hope that the king would hear him and would sing back the second verse.

And now, when the minstrel had given up all hope, and was sitting beneath the castle wall, his eyes wet with tears, someone from a window above began

to sing in a strong voice that shook with emotion :

If I were housed on a hill on high,
And you were lodged in a lowland pass,
I would sing to you as a lark in the sky
Sings to his love in her nest in the grass.

It was the second verse of the song which only the king knew ! After all his efforts Blondel had at last found his king. Here in this castle he was imprisoned.

Leaping up with joy at his discovery, the minstrel sang the first verse again, to let the king know that he was still there listening. Then, careless whether he got a lodging for the night or not, he left Durenstein, and hastened through the darkness along the path which led for hundreds of miles across Europe to the English Channel. At night he slept on the rocky ground, and shivered in his rags. By day, stopping only to gather such roots and wild fruits as would stay his hunger, he pushed on through the forest.

It was months before he reached England, but when he arrived there he sought out William Longchamp, the Lord Chancellor, who was still faithful to Richard, and in 1194 Richard of the Lion's Heart landed at the little English port of Sandwich a free man through the efforts of Blondel.

THE KING'S THREE QUESTIONS

FREDERICK II, known as "the Great," King of Prussia, throughout his reign took the greatest interest in the improvement of the Prussian army. For the guidance of his generals he wrote a number of works covering the whole science of war, and he was very fond of his guards, and knew every one of the men personally.

Whenever he saw a new recruit, he used to call him from the ranks and ask him three questions : How old are you ? How long have you been in my service ? Are you satisfied with your pay and treatment ?

One day a young Frenchman joined the regiment, and as he did not know any German, he was taught the answers to the king's three questions in the order in which they always had to be given.

Not long after, Frederick caught sight of the young man but, unfortunately, on

this occasion he did not ask the questions in their usual order.

"How long have you been in my service ?" asked the king.

"Twenty-one years," replied the Frenchman.

"Twenty-one years !" said the king. "Then you must be very much older than you look. How old are you ?"

"One year," answered the soldier.

"Upon my word," cried Frederick, "one or other of us must be mad."

"Both," said the soldier, who had been taught that this was the proper answer to give to the king's third question.

The king, of course, flew into a great rage, and the poor recruit then explained the whole matter in French, a language that the king understood perfectly. Frederick laughed heartily, and advised the soldier in future to speak only a language he knew.

CONTINUED ON PAGE 6283.

The Book of FAMILIAR THINGS

WHAT THIS STORY TELLS US

NO invention of our day means more to people who live in cities than the high-speed elevator. Without it our large cities would not be possible. If all the people who now live in New York or Chicago were forced to occupy buildings so low that the stairs could be climbed easily, the cities would necessarily be spread out over enormous spaces. Offices and homes would be so far apart that men could not do business as they do to-day. The modern elevator carries us swiftly, safely, and almost noiselessly, up and down, ten, twenty or thirty stories, and few give a thought to the wonderful machinery which helps us so much. We tell you in this story how the ordinary electric elevator works, and show you also a very common elevator which is worked by the power of water. Both are safe and swift. When you have read this story, you will be able to tell them apart, and to understand the machinery which moves them.

HOW ELEVATORS GO UP AND DOWN

THOSE of you who live in a large city take the tall buildings, ten, twenty, thirty, or even more stories high, as a matter of course. If you have never seen the buildings themselves, you have seen pictures of them, and may have wondered how people can be found to fill them.

You have already been told in our book of the method of building, that the framework is of steel and supports the walls. Without this kind of construction, such buildings would not be built at all. If the whole of the great weight rested upon the walls, it would be necessary to make them so thick at the bottom that most of the lower stories would be a mass of stone, without any room for offices or shops. The walls could be made thinner toward the top, of course, but much space would be wasted.

But even when these high buildings are built they could not be used but for another modern invention. In some of them thousands of men and women work, the population of a town sometimes. How do they get to their offices so high up in the air? Only very strong and very active persons could climb twenty flights of stairs several times a day.

THE ELEVATOR MAKES THE HIGH BUILDINGS POSSIBLE

Go into one of these buildings and you will see, behind iron or glass doors,

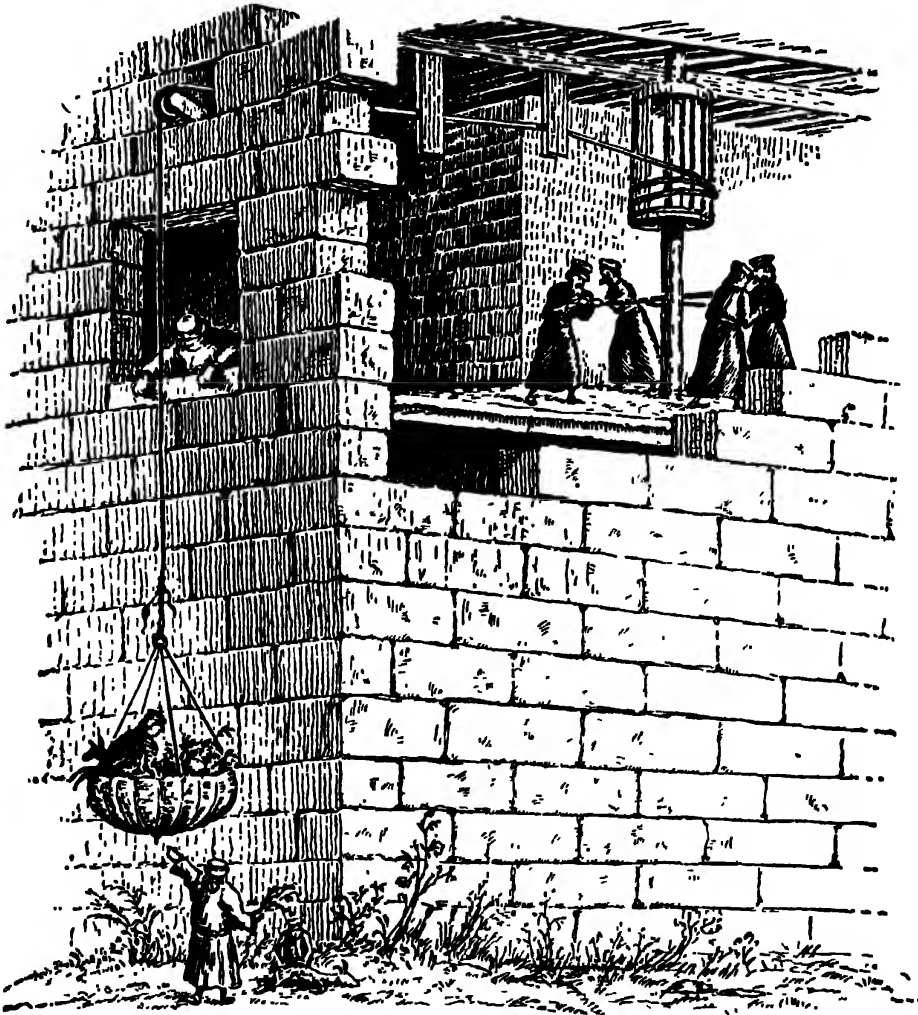
CONTINUED FROM 6160

one, two, a dozen, or perhaps more elevators, depending upon the size and height of the building. A door is slid back, and you step into the car with other people, sometimes as many as twenty, the door slides shut, a lever is pushed, and up you go like an arrow. You are carried straight up, the length of a city block, in much less time than it would take you to walk that distance on the pavement. The doors are opened, you step out, and the car goes on, or else returns to the first floor.

Such is the modern high-speed electric elevator. But it was not always like this. From very early times men have felt the need of some sort of a machine to lift themselves or goods. In our first picture you see an early form of lifting machine. During the Middle Ages, as you have been told, there was little law and order in the world. The motto of the time was: "Let him get who hath the power, and let him keep who can." Robbery was a common profession then. Here you see a corner of an old monastery, which had no entrance on the level of the ground. Provisions and visitors were hoisted in the basket. Elevators of this sort are still in use, though not often to raise passengers. The bucket and windlass at the well really make a sort of elevator, though we do not think of them as such.

After the steam engine was invented, elevators were raised by winding the rope upon a cylinder. You may have seen one working upon this principle, loading or unloading a boat, raising dirt from the foundation of a house, or lifting building material high in the air. Though they

and many of them are in use at the present time. One type is the plunger elevator, which is one of the safest kinds. A strong iron pipe is sunk into the ground, as deep as the building is high. A strong iron cylinder, which fits tightly, but smoothly, is placed in the the large pipe



This picture was drawn from an old print which showed how some monks in an old monastery got in or out of their home. There was no entrance on the ground floor for fear of robbers, but monks, visitors and provisions were hoisted up to the opening above. Of course the wall nearest us was solid

have no car, they work in the same way. These were not very satisfactory, for a man had to be employed to run the engine and another to look after the car.

THE POWER OF WATER IS USED TO RUN ELEVATORS

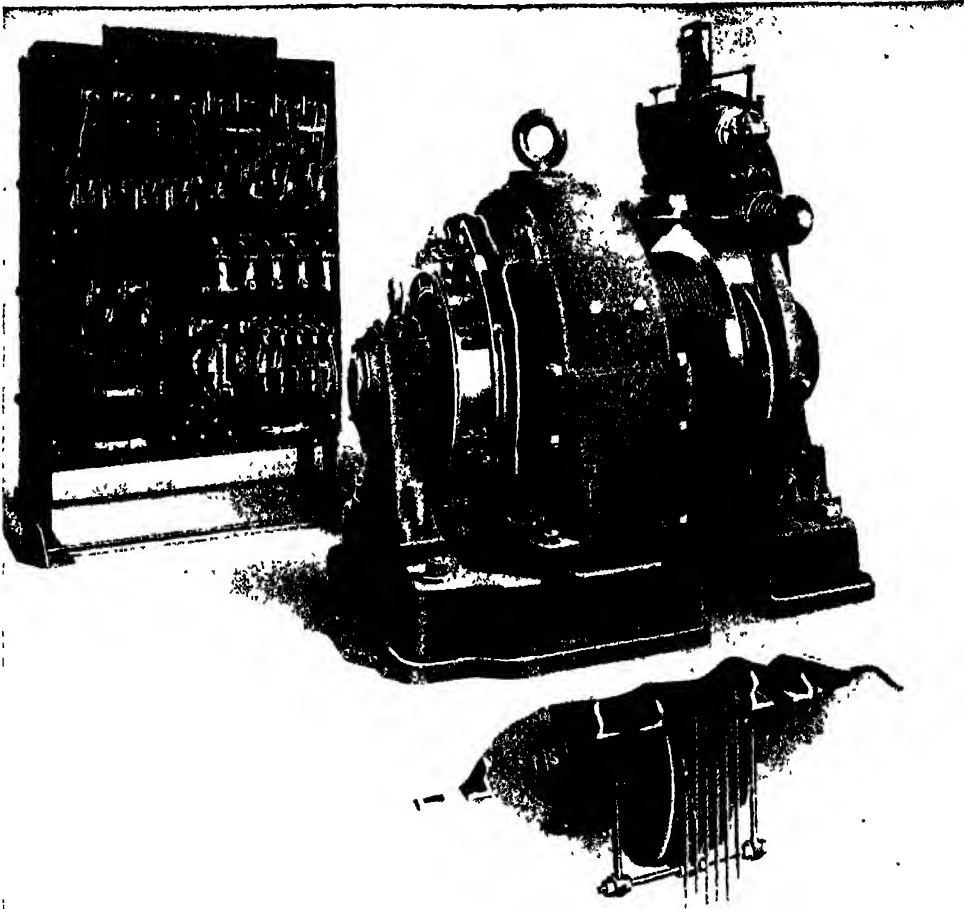
Men had learned the power of water by this time, and we soon see that use was made of it to lift passengers. The hydraulic elevator was soon improved,

and the car is fastened on the top. In the pipe are two openings, one to let water in, the other to let it out. Now, if water, which has been compressed by a powerful pump, is let into the pipe, it will force up cylinder, car and passengers. When the car has gone as high as is desired, the water is cut off, and the car ceases to rise. When the operator wishes to descend, he opens the outlet

HOW ELEVATORS GO UP AND DOWN

pipe, and as the water escapes the car sinks. All this is done from the car itself. You will see elevators of this kind in many buildings which are not very tall, such as department stores. They are very safe, for they cannot fall unless the pipe should burst, and then the water

rather hard to describe, but perhaps you can understand if you study the picture carefully. In all of these cars you will notice heavy weights hung in the shafts outside the cars. These are made to weigh almost the same as the cars, so that they would almost balance if the



This is the motor, the sheave and the brake which controls an electric elevator. The motor on the left turns the sheave in either direction as the operator decides. The brake helps to check the car, and the wire ropes support it. The idler sheave, around which the ropes run, is underneath the floor. The switchboard, behind, controls all the elevators in the building.

Pictures by courtesy of the Otis Elevator Company

could not escape very rapidly. When the pipe does not go through rock it is often surrounded by cement.

There is another type of hydraulic elevator which is more used than this. It has a cylinder and a plunger, too, but the plunger is connected with the wheels over which the rope goes, and is so arranged that when it moves a few feet it makes the car move many feet. It is

cars were let loose. The power, then, no matter what it is, has only to lift the load, and not the heavy weight of the car.

ELECTRICITY NOW USED MORE THAN ANYTHING ELSE

Most elevators, nowadays, are run by electricity, and are of two kinds. One has a drum, or windlass, which is run by an electric motor. The rope which lifts the car is wound around this drum. This

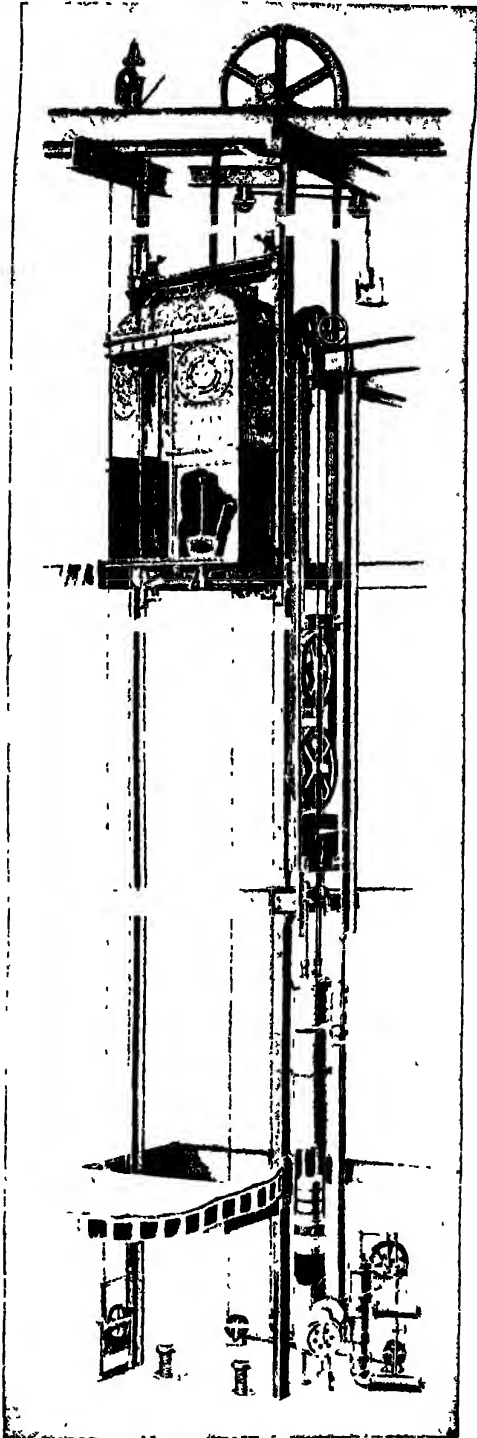
kind cannot be used very well in a very high building, for the machinery would take a great deal of room.

Therefore, advantage has been taken of the fact of friction. The rope is run over a pulley, called a "sheave," then over another and then over the first again, making a complete loop. A rope would like this cannot slip, for the greater the weight, the tighter the rope clings. One end of the rope is attached to the car and the other to the counter weight. The electric motor turns the sheave, and the rope passing over this and the second or "idler sheave" raises the car. The motor will turn the sheave just as rapidly in the opposite direction. The brake is on the other side of the main sheave. A switch in the car enables the elevator man to go up or down, slowly or rapidly, or to stop at once.

WHAT WOULD HAPPEN IF THE ROPE BROKE

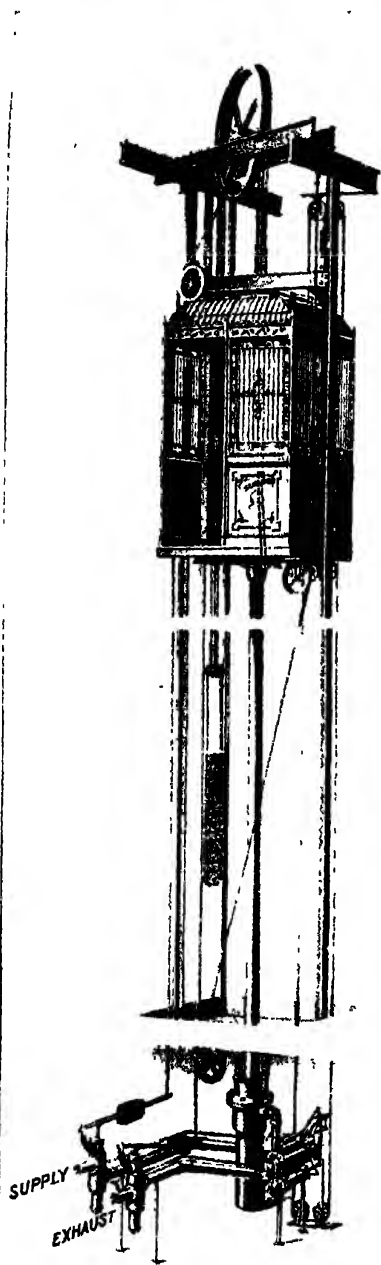
What if one of these cars should fall? This does not often happen. In the first place, though one wire rope is enough to sustain the weight, very often as many as six are used. It is almost impossible for all of them to break at once. Then, too, the brakes are set to hold the car if the power is cut off. There are still other things which help to make the car safe. On the bottom of the car are powerful steel jaws, which catch the rails between which the car runs if it begins to run too fast. These devices would seem to be almost enough, but the makers of elevators have invented something else. At the bottom of the shaft are two oil cushion buffers. If the car should strike them, the oil would be forced slowly into other chambers, and the shock would be broken, just as when you jump upon a feather bed. Sometimes the bottom of the shaft is made very tight, and the car fits closely. Then if the car comes down rapidly, the air cannot get out, but is gradually compressed and pushes back against the bottom of the car. Once a test was made to see what would happen. Everything which would stop the car was removed and it was allowed to fall. It dropped like lightning at first, but as it drew near the bottom it began to go more and more slowly, until finally it reached the bottom without breaking a single one of a basket of eggs which had been left on the bottom of the car.

THE NEXT STORY OF FAMILIAR THINGS IS ON PAGE 6203

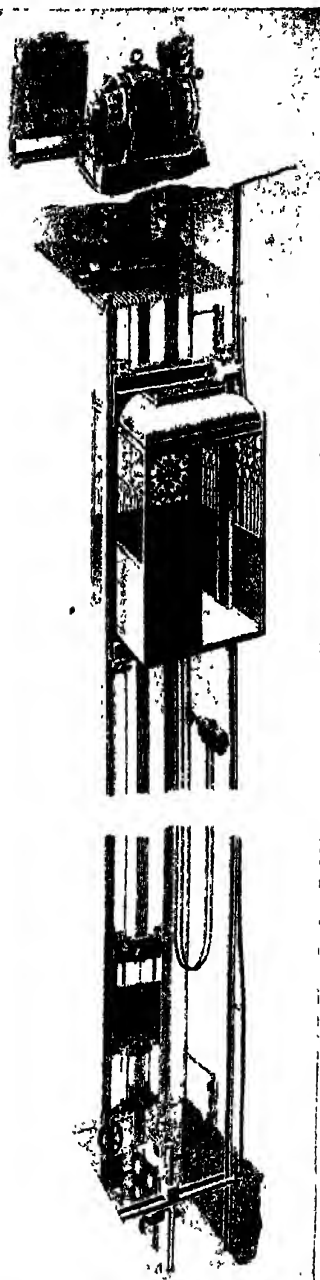


This is a common type of hydraulic elevator. The piston or plunger works in the tank of water, and as it is pushed out or drawn in, raises or lowers the car. A part of the side of the tank is removed so that you can see the piston. The rope is run several times around the pulleys, so that when they move a foot the car moves several.

TWO TYPES OF PASSENGER ELEVATORS

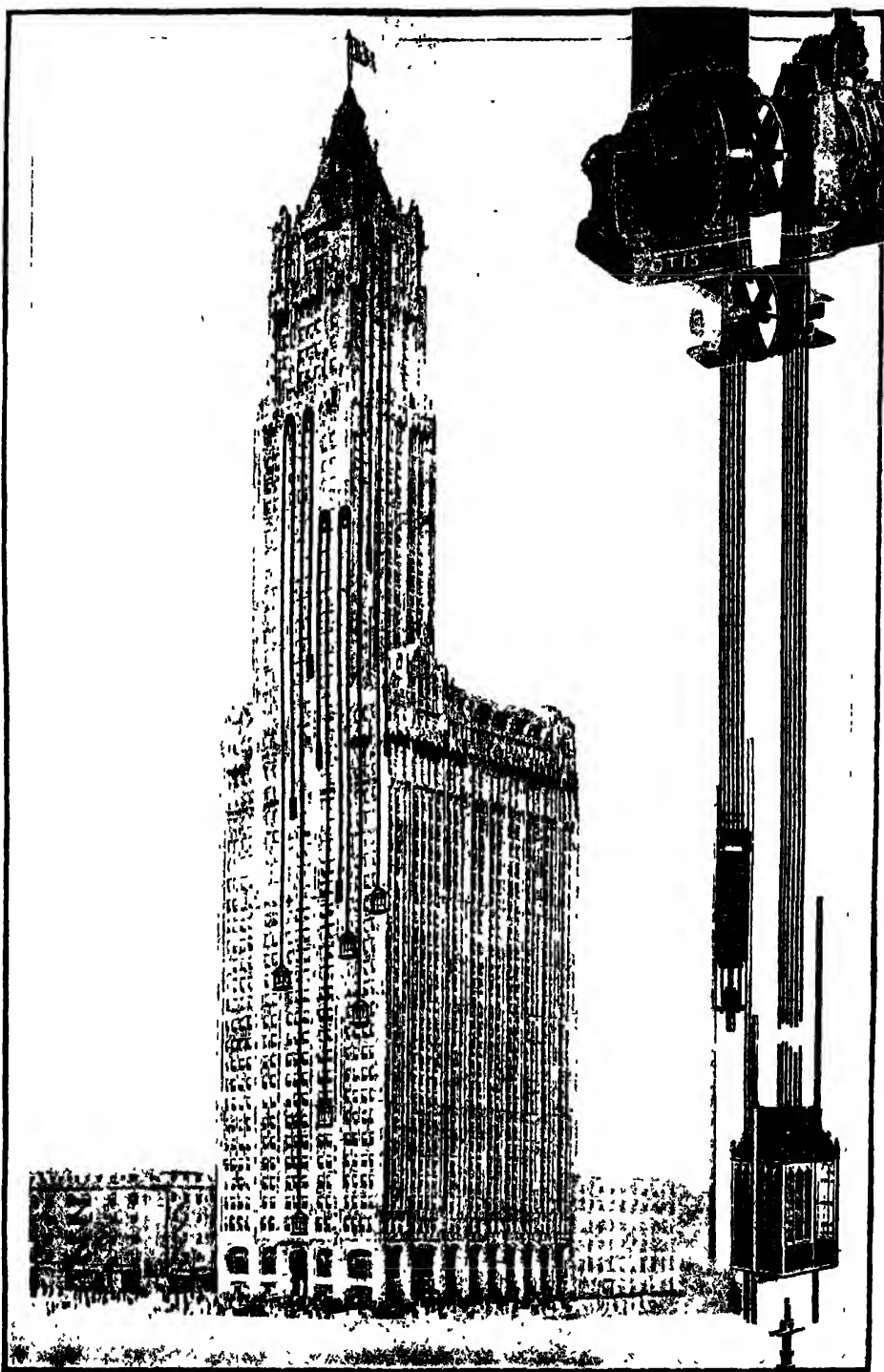


This hydraulic elevator is pushed up by the pressure of water which is forced into the pipe in which the plunger at the bottom of the car's sides. When the water is allowed to run out the car descends. The iron pipe must be as far in the ground as the building is high. The break across the machinery means that we cannot show the whole height.



The high-speed electric elevator is run by the tiny electric motor at the top, which turns the sheaves in either direction, or stops, according to the position of the tiny switch near the door of the car. The distance from the bottom to the top of an elevator shaft like this may be several hundred feet. We show you here only the top and the bottom.

ELEVATORS IN A HIGH BUILDING



This shows the elevators which run in the tower of the Woolworth Building in New York City. Since the number of people on the top floors is not large, not all the elevators run to the very top. The small elevator highest up, carries people from the top floor to the platform near the top of the tower. These are only a few of the twenty-six elevators in this building. Some buildings have even more.

The Book of FAMILIAR THINGS



Young Sailors Learning to Tie Knots at the Pelham Bay Station

SHIPS AND SAILORS OF OUR NAVY

IN another part of our book we have told you some of the stories of the United States Navy while it was small and weak. There are many other stories of bravery and skill which we did not tell, but we cannot find space for them all. They would entirely fill our book. Now we shall talk a little about our navy to-day, when it is one of the largest and strongest in the world.

The ships in which Perry, Decatur, Hull and the rest fought were sailing vessels built of wood. They carried a great many guns, more than the largest battleships do now, but these guns were small, did not carry far, and were not very accurate. One of the smaller battleships of to-day would destroy any number of the best wooden ships of the War of 1812. They could hardly get near enough to fire a shot, and if by chance they did, they could not do much harm.

THE FIRST BATTLE OF IRON SHIPS IN THE WORLD

You have read of the battle between the Merrimac and the Monitor in the Book of the United States. This was the first battle of iron ships in the world, and soon all the nations were building them. From this small beginning have come all the mighty battleships which cost so much money and can do so much harm.

Though the United States had a

CONTINUED FROM 6202

large fleet during the Civil War, after the war was ended the people wanted peace so much that the navy was neglected. It was thought that no foreign power would interfere with the United States, and the old wooden ships were allowed to rot. It had been found that vessels like the Monitor were not safe in a storm and few of them were built. For a time the United States did not have a single armored ship.

Men began to see that the United States would be helpless if attacked, and in 1883, Congress ordered four armored ships. Four more were ordered in 1885, and more ships were ordered every year after this. In 1890 Congress ordered three large battleships. Others were built later, and the work of the navy in the War with Spain convinced the country that we must have many more ships.

THE DIFFERENT KINDS OF SHIPS IN A NAVY

There are many kinds of ships in a first-class navy, used for different purposes. We often speak of the great gray battleships as if they were all. These battleships are very important, and they cost more than all the others together, but in any navy they are few, compared with the whole number. Besides the battleships there are usually cruisers of several kinds, scout ships, gunboats, destroyers, torpedo boats,

submarines and submarine chasers, flying-boats, colliers, supply ships, hospital ships, and others.

Let us look at the United States Navy. First to be mentioned are the battleships. We had thirty-six of these at the beginning of 1917, and there are probably several more now, for the government has been building steadily for years. Some of these are old, and some are new. The newest ones are the most powerful, for they carry either more guns or else heavier ones. Such ships are several hundred feet long, and have very powerful engines which give all the newer ships a speed of twenty knots an hour, or more. The ship is protected above the water line by heavy plates of hardened steel, twelve inches or more thick. They have eight to twelve big guns, and a large number of smaller ones.

One of these great ships costs at least \$10,000,000, and some of them cost much more. It costs thousands of dollars to fire its big guns. It carries a crew of several hundred men. Ships differ so much that it is hard to give exact figures which will be true for all of them. The battleships are named for the states of the Union, as Wyoming, New York, and Oklahoma.

Next come the cruisers. There are several kinds of them. Generally we can say that a cruiser has lighter armor and fewer guns than a battleship, but greater speed. The idea is to have a ship which can get to the point of danger quickly and will still have power enough to do damage to the enemy. Some of the cruisers are named for states, but generally they are called for cities, as St. Louis, Milwaukee and Charleston.

THE SWIFT DESTROYERS WHICH PATROL THE SEAS

One of the most important ships is called the destroyer, and got the name in a peculiar way. Years ago, when the torpedo first came into common use, small ships were built which fired torpedoes from the deck. Larger ships were built to fight the torpedo boats and were called torpedo boat destroyers. They carried torpedo tubes, and rapid fire guns also. They were so much superior to the torpedo boats that few of the latter are built now, but every navy has many destroyers.

The destroyers have no armor, but do have great speed. Some of them can make over thirty knots an hour. They

are armed with three or four-inch guns, and carry torpedo tubes. They run errands, protect merchant vessels and look for mines and submarines. If they get the opportunity their torpedoes will sink a battleship. Their guns will smash a submarine, and if it submerges, they will drop a depth bomb into the water where it went down, or where they think it has gone. The depth bomb is a steel case containing explosives, which can be set to explode at any depth desired. As you know the pressure of water increases with the depth, and since experiments have shown the difference the bomb is set to explode at a certain pressure. This bomb may destroy a submarine even if it explodes some distance from it. The United States destroyers are named for the naval heroes, as Porter, Sampson and Cushing.

We have already told you about torpedo boats. Now we come to the patrol boats, or submarine chasers. They are really scout boats, and can do good work against the old-fashioned submarines. The newer submarines carry guns on their decks, which are sometimes heavier than those of the patrol boat, however, and could easily destroy it. But the patrol boats can be of much service in many ways.

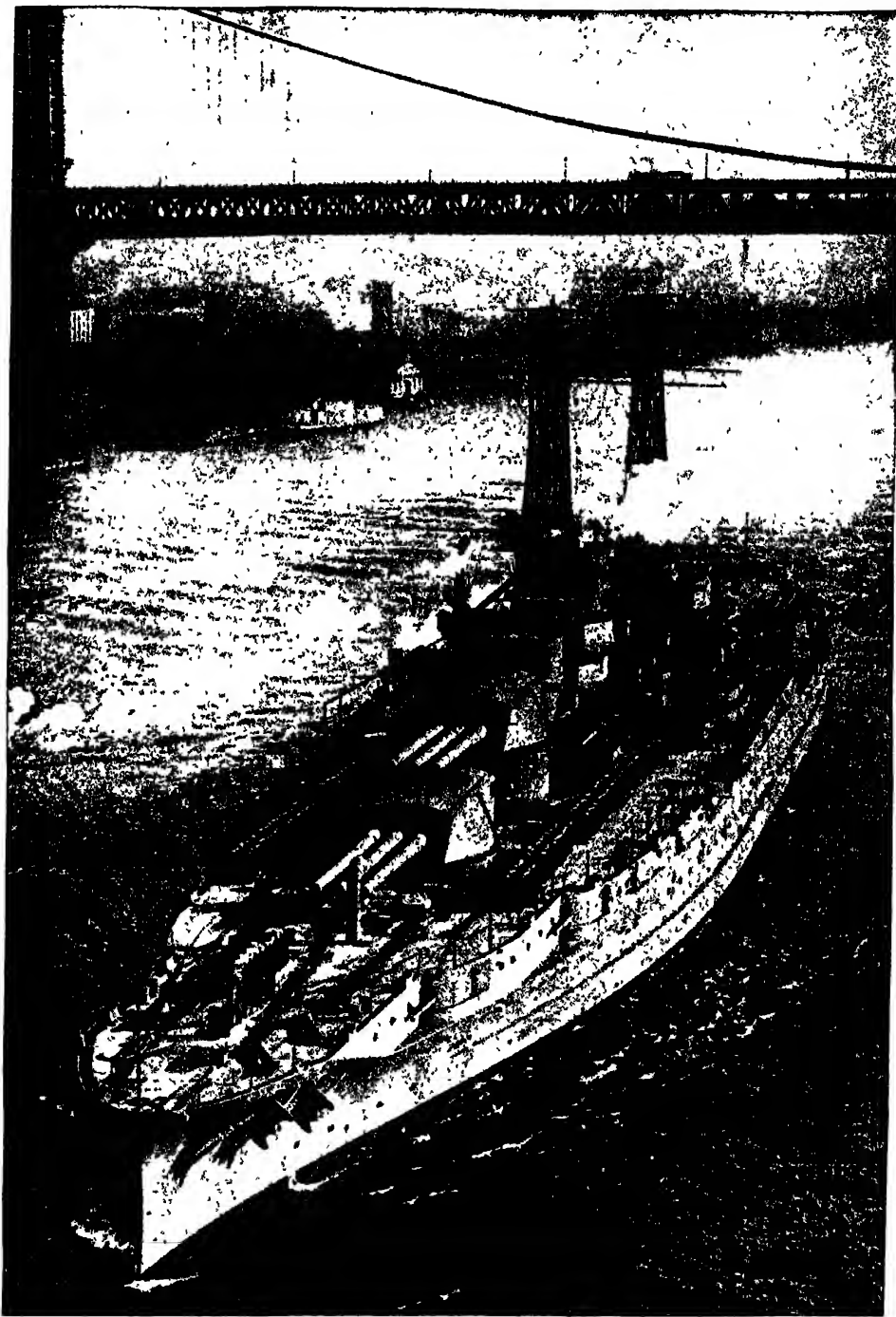
We have told of the submarines and of the flying-boats in other stories in our book, and cannot tell more of them here. Every first-class navy must have both.

A battleship uses a great deal of coal, but does not have much room to carry it. So we have colliers which carry many tons, and meet the battleships at some place agreed upon, or else stay with the fleet except when a fight is expected. Formerly ships were coaled by taking on coal in small bags, but the new colliers use derricks and scoops. Some of the battleships burn oil, and for them there are oil ships.

There is not much room for wounded on a warship of any sort, and they can not be looked after very well. So hospital ships are fitted up, to take care of the wounded from the fleet. Some of them have every convenience that a good hospital would have.

Besides these which we have mentioned, many vessels are needed in a well equipped navy. It must have tugs, supply ships, and often a vessel is fitted up as a workshop, where repairs too difficult to be made on a fighting ship may be

ONE OF THE MOST POWERFUL BATTLESHIPS



The United States ship Arizona carries twelve 14-inch guns, and twenty-two 5-inch as a secondary battery, besides four torpedo tubes. The shells of the great guns weigh 1,400 pounds. The horse-power is 32,000 and it was designed to make twenty-one knots an hour. It is said that some of the ships now building will carry 16-inch guns, which will throw a shell weighing 2,100 pounds a distance of twenty-two miles. There are six other vessels in the United States Navy of about the same power as the Arizona. We show some pictures of a sister ship, the Pennsylvania, including the heavy guns, which are so formidable. Pictures on pages 6205, 6208, 6209 from Brown Bros.

A LATTICE MAST ON A BATTLESHIP



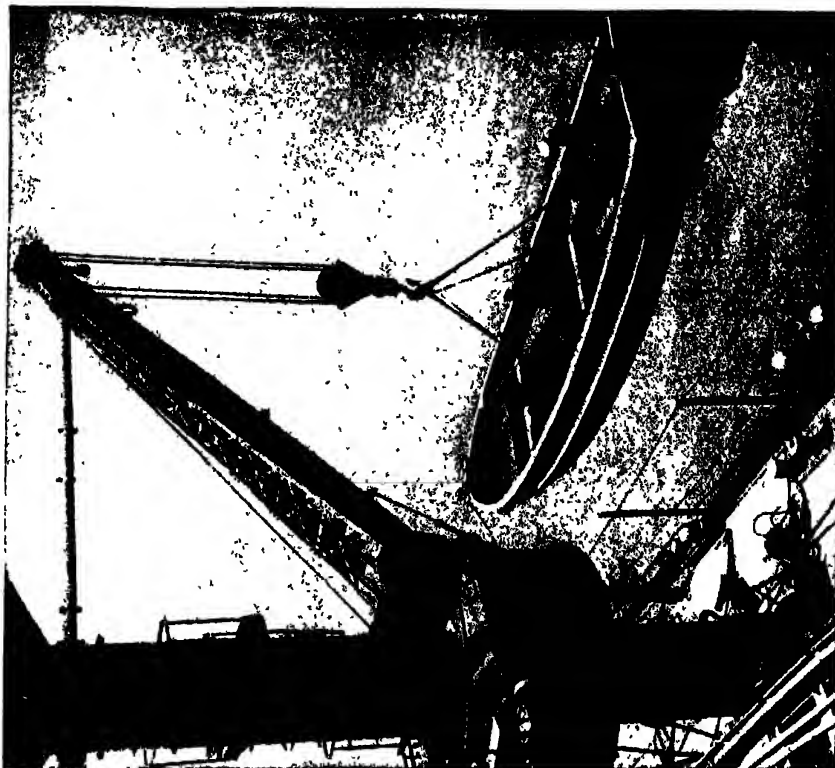
The United States battleships have these peculiar masts, made of rods of steel bound together, which are seen upon those of no other nation. Ladders inside enable the sailors to climb to the lookout or to repair the wireless and do many other things. Note the two enormous searchlights near the bottom of the picture. They can make the spot upon which they are turned as bright as day.

Pictures on pages 6206, 6207, 6212, 6213, 6214, copyright by Underwood & Underwood, N. Y.

THE GREAT BATTLESHIP IS PREPARING TO DEPART



The Pennsylvania is getting up steam, preparing to depart. The engines are so large that this cannot be done all at once. Here you see the small boats stacked on the deck and one is hanging on the left. This is about the centre of the boat.



You see here a closer view of the derrick, which is lowering the tender into the water. It has been swung from its position on the deck and swung out over the water. A modern battleship is a very expensive mass of exceedingly complicated machinery.

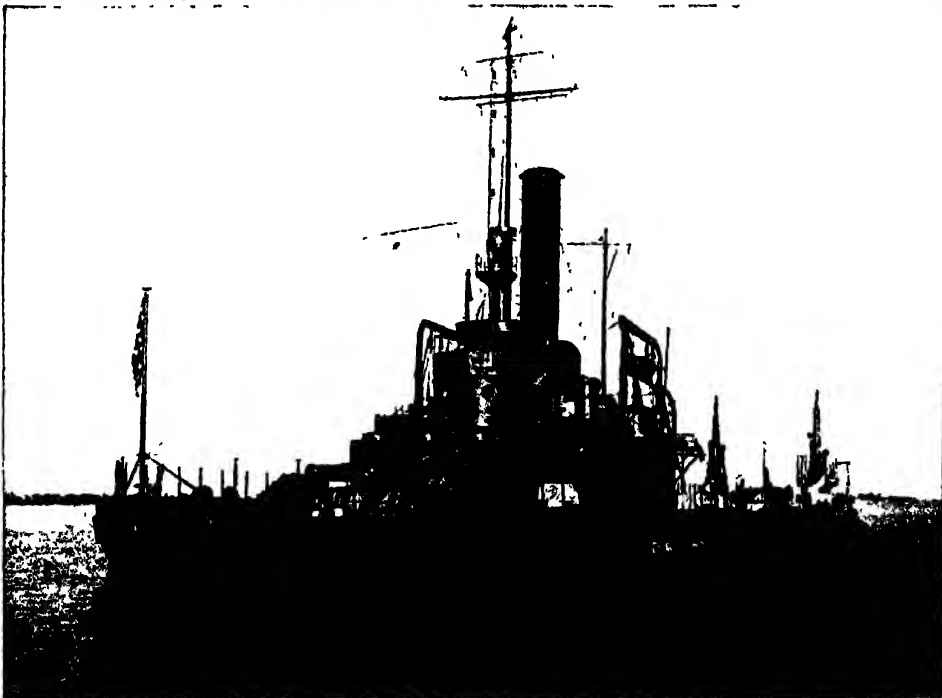
FOES AND FRIENDS OF THE SUBMARINES



During the Great War the United States built a great number of swift wooden boats for use against the submarine. They carried a small crew, a light gun, and a machine gun. Steel boats were built also.

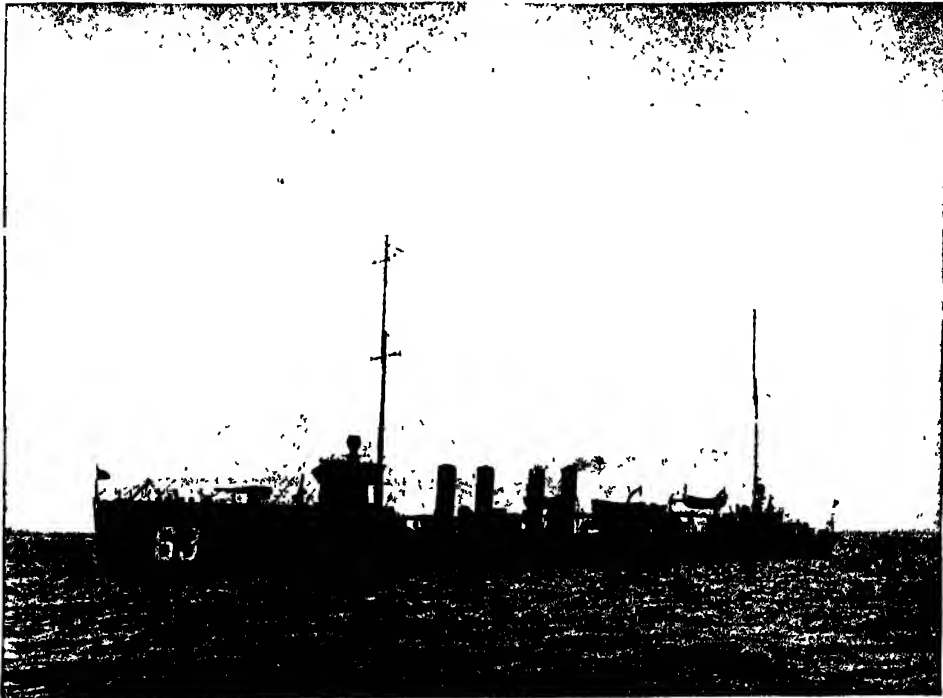


Sailors are here shown painting the sides of the immense Pennsylvania. This was done before she was finished, but battleships are often painted. Copyright by Underwood & Underwood, New York.



Here is a "mother ship" with two United States submarines lying beside her. The mother ship carries supplies, fuel, spare parts, and has a complete forge and workshop, where repairs to machinery can be made. This mother ship was an old monitor before it was assigned to its present duty. It carries two 12-in. guns but is not suited for regular ocean duty as it lies too low in the water.

ONE OF THE GREYHOUNDS OF THE SEA



Soon after the self-propelling torpedo was invented, many torpedo boats were built, but soon larger boats, called torpedo boat destroyers, took their places. This is one of many United States destroyers. It has a speed of nearly thirty knots, and carries four torpedo tubes and four 4-inch guns. Such boats are dreaded by enemy submarines, because of their speed and the accuracy of the fire of their guns.



Here we see sailors working on a torpedo, which is fired from the torpedo tube to the right. The explosive is in the nose of the torpedo, which we cannot see. The body of the torpedo contains the chamber for compressed air and the machinery which moves the propeller and guides it. The torpedo is shot over the side of the ship by compressed air, and then moves by its own power.

THE LIVING HEART OF A GREAT SHIP

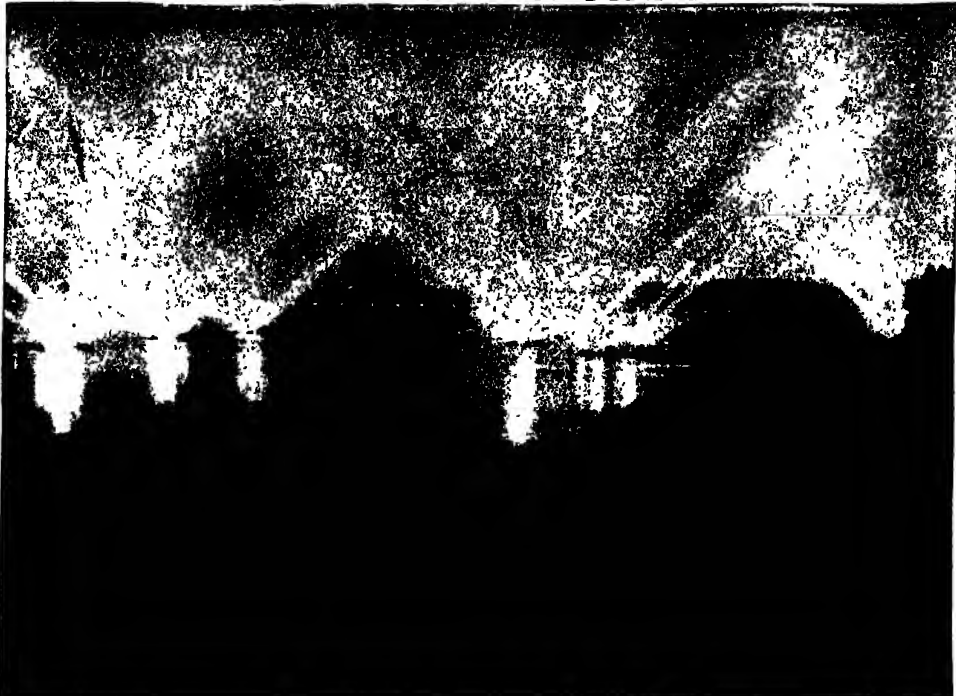


The great throbbing engines are the heart of a battleship. They give life to the floating giant and send it through the waves at the rate of more than twenty miles an hour. Here we see the engine-room.

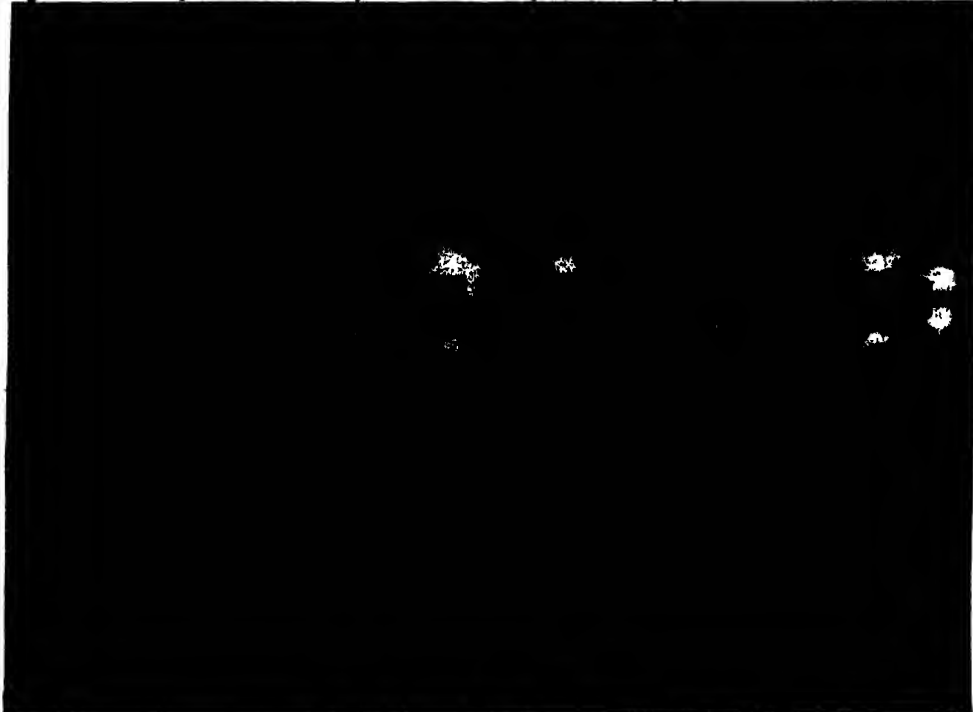


The engines of the latest battleships do the work of over 30,000 horses, and when they are moving the furnaces must be fed. This is the stoke-hole of a battleship, where the coal is shoveled into the furnaces.

SHIPS THAT PASS IN THE NIGHT



The battleship must not only be watchful by day, it must be effective at night; in order to keep keen look-out for enemies, it is fitted with wonderful searchlights that can be flashed in all directions. These lights are of many thousand candle-power and reveal quite distinctly places and objects miles distant.



Magnificent and imposing as is a battleship by day, when its steel walls and powerful armament are plainly seen, it is, perhaps, even more impressive by night, when its massive outlines and sombre figure, only dimly to be perceived, are dark and ominous. Themselves almost invisible they can at any moment throw a powerful light upon their foes. The possibilities of these great fighting vessels are appalling.

BIG AND LITTLE GUNS ON A BATTLESHIP



While the chief power of a battleship is its heavy guns, they carry lighter guns, and the smaller ships, of course, cannot carry the heavy guns. Here we see the guns of small calibre being fired from a small ship. The sailor with the telephone at his ears is aiming the gun according to directions received from an officer above. One shell is in the gun and you see that two sailors each have another ready.



So far no United States ship has carried larger guns than fourteen-inch. They are arranged three in a turret, which can be turned. Here you see six of the twelve heavy guns on the Pennsylvania. They throw shells weighing 1,400 pounds. Five hundred and fifty pounds of powder is required to send out these missiles. Some countries have ships with eight fifteen-inch guns, and the United States is experimenting.

DAILY ROUTINE ON A GREAT BATTLESHIP



Sailors do not often come very close to the enemy, for most naval battles are fought at a distance of several miles. However, it may be necessary to land a party sometimes for various reasons. The sailors therefore are drilled in the manual of arms, exactly as soldiers. Here we see a part of the crew of a great battleship being drilled on the deck, by the officer in the background. Some of the sailors are curious.



Everything about a battleship must be kept scrupulously clean since so many men must live in a small space. Even the decks are washed and scrubbed every day until they shine. Here we see the sailors whose turn it is to do this work, making the deck so clean that one could eat from it. The effect of the light and the wet deck makes a very attractive picture, which the sailors probably do not notice as they work.

done. One or more of these will go with every fleet.

Now who are the people on the battleship? Let us first take the officers. In our story of Annapolis we told you that the young graduate was appointed an ensign. This corresponds to the second lieutenant in the army. Next in rank is junior lieutenant, equal to first lieutenant in the army, while lieutenant corresponds to captain. Next comes lieutenant-commander, corresponding to major, and commander, corresponding to lieutenant-colonel in the army. The captain in the navy is equivalent to the colonel in the army.

are the clerks. Hospital attendants, druggists, cooks, bakers, etc., are also needed.

When a young man enlists he is usually sent to a training station for a few weeks or months. Here he learns the drill, the great lessons of obedience, neatness and promptness, and begins to learn his duties. Many things on a ship are not done the same way as on land. The sailors sleep in hammocks, which are rolled up out of the way in daytime. The tables from which they eat, are often swung up to the ceiling to get them out of the way when not in use. Every inch of space is precious, and the same room must be used for several



Copyright, Underwood & Underwood, N. Y.

The food served on the ships is always good, but on holidays and special occasions extra attention is given to the bill of fare. Young men almost always improve in health while in the navy. Here you see the cooks preparing for Thanksgiving. A great quantity of everything is required to feed several hundred hungry men

Above the captain the ranks are rear-admiral, vice-admiral, admiral, and admiral of the navy. There are many petty officers and warrant officers, which correspond in a general way with sergeants and corporals in the army, though their positions are more important in some ways and they get more pay.

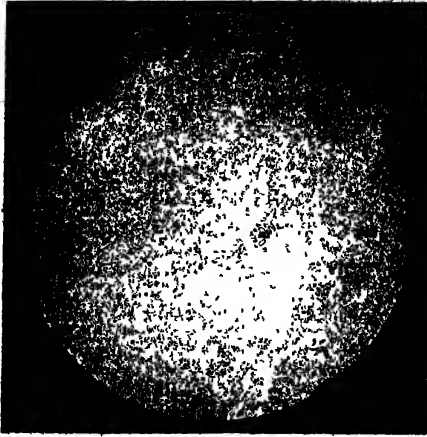
A sailor enlisting in the navy for the first time must be between seventeen and thirty years of age, and must be able to read and write English. He may enlist as a seaman, or for work at the particular trade he knows. A battleship is a great mass of complicated machinery, and blacksmiths, carpenters, machinists, shipwrights, steamfitters, plumbers, electricians, and the like are needed. Yeomen

things. Each sailor has a box with a lock in which he may keep any small thing he prizes. His clothes are kept in a strong bag and every article must be folded and rolled in a particular way. An officer frequently inspects the bags, and the young recruit soon learns to be orderly.

Enlistment in the navy gives many young men a better education than they would get outside. Classes are held on shipboard in time of peace, and besides a young man may learn a trade which will enable him to make a good living when his term of enlistment has expired. In addition he sees the world, gets good food and clothing, and learns habits which will be of use to him in after life.

THE NEXT STORY OF FAMILIAR THINGS IS ON PAGE 6259.

The Book of WONDER



When we say that we can see a man in the moon we mean that the shadows seen in the left picture look like the eyes, nose, and mouth of a man; but in the right picture, which shows the moon as seen through a telescope, our artist shows us how we may get a very much clearer image of a man in the moon by merely emphasising a few of the lines that are really in existence.

WHO IS THE MAN IN THE MOON?

FANCYING that we see faces or figures in the moon is rather like playing the game of pictures in the fire. At times we can certainly imagine that we see a great face in the moon, though we change as we grow older, and the writer of these words, who used to see the face very clearly when he was a child, has not seen it for many years—probably because he is looking for something else.

At any rate, there is no doubt that there are markings on the moon, and that in proportion to the moon's size they are very large, and many of them very high. We can prove that they are so by measuring the length of the shadows which they throw upon the moon's surface when the sun's light catches them sideways. These markings are partly what we must call mountains; they are partly, perhaps, in the nature of creeks, or clefts, and the most remarkable and beautiful of them look like craters of huge volcanoes. These are very large and have very high sides, as we can see when the sun shines sideways upon any of them. It is these

CONTINUED FROM 5906



craters, above all, that help us to see the man in the moon, or the little old woman gathering sticks, or whatever else people have thought they could see there.

There remains, however, a deeply interesting question which astronomers are now studying keenly. Are these craters really craters, and was the moon's surface really once covered with gigantic volcanoes? Some argue that things are indeed what they seem on the surface of the moon, and that the volcanoes were very large because the moon is so small. That sounds curious, but the explanation is that the moon, being small, would cool very quickly, and if it cooled very quickly and shrank very quickly its volcanoes would all be on a large scale.

But other astronomers are beginning to say that perhaps these markings never were volcanoes at all. They argue that the moon has no atmosphere to act like a great protective blanket or like the armor-plate of a ship, as our atmosphere does, and that the effect of meteorites, or shooting stars, falling upon the moon

would therefore be very serious. They argue that, at a certain stage in the moon's history, when its surface was much softer than it is now, pieces of rock, or whatever we like to call them, flying about in space and striking the moon at a tremendous rate might produce those effects which we now imagine to be craters. If this is true, the "marks" are not really craters at all, but are mighty scars, or holes, punched in the moon.

HOW DOES A GYROSCOPE WORK?

A gyroscope is very like a top. Indeed, it is only a very heavy and carefully-made top. It usually takes the form of a wheel with a heavy metal rim, and this is held or enclosed in such a way that if it is set spinning it can do so freely. Of course, any spinning thing tends to slow down, owing to the resistance of the air, and the friction where it is supported—unless, like the earth, it does not spin on anything. So by various means a gyroscope may be made to go on spinning, and then we can observe its behavior in all sorts of conditions.

It has been learned by men of science that mere motion will give resistance and force and all the properties of hardness and rigidity to things which had not these properties before. This is true of the gyroscope. Its spinning motion gives it the power to resist very firmly anything that tends to alter the direction of its spin. The heavier the gyroscope, the greater will be the amount of motion in it when it spins, and the greater its resistance to any force that tries to alter the direction of its motion.

Therefore, a railway car may run safely on a single rail without tilting over, simply because it carries a spinning gyroscope, spinning so fast and made so heavy that its tendency not to be disturbed or tilted will prevent the car from tilting.

WHY ARE CHILDREN FOND OF DOLLS?

Some people have said that children are not fond of dolls because they are dolls, but because they are possessions. These people declare that the secret is found in the liking which children have to possess things, just as grown-up people have the same liking, and that children will become quite as fond of anything else that is theirs as they will of a doll.

But those who really know anything of children know a great deal better than this. They know that, as a rule, a child, at any rate during several years of its life, is far fonder of a doll than of anything else, and that the child is more pleased with the chance to nurse a real baby. So the truth is that the love of dolls is really the mother-instinct and the father-instinct showing themselves already, even in little girls and boys.

Often little boys are told that they should not play with dolls, but with soldiers. One little boy, who had not been taught such nonsense, had his doll out with him in the street, and some big boys cried out and jeered at him. But the little fellow had a good reply. He turned round and said, "None of you will ever be a good father."

WHY DOES A HEN CACKLE AFTER LAYING AN EGG?

Of course this is not an easy question to answer, for we cannot ask a hen why she cackles, and indeed, if she could speak, she could not give a reason; for this act, like many of our own, is not a reasonable one, but simply a consequence of the way in which a hen is made. It is what is called an instinctive action. Yet we can understand it because we can compare it with actions of other creatures about which there is no doubt.

The doing of anything which we were meant to do gives us pleasure. The bodies of living things are constructed in this way, as we might well expect. Now, pleasant feeling in ourselves and in other creatures often excites the body to some kind of activity, as when we say that a person sings for joy. When we feel very pleased with ourselves we want to sing, or whistle, or dance, or do some such thing. It is a question of what is called the expression of the emotions. A dog has the advantage of us in one respect, because it has a tail, and when a dog is pleased, it not only gives a special bark, which is its way of singing for joy, but it also expresses its emotion by wagging its tail. On the other hand, an angry lion will sway its tail from side to side, and express its anger in that way.

So when the hen cackles after laying an egg, it is simply her way of singing for joy. Her body and her feelings have

the satisfaction of having done something which her body is meant to do. It is probable that the actual laying of the egg causes discomfort, and there is a corresponding feeling of ease and satisfaction when the task is done.

WHAT ARE "BLIND-ALLEY" OCCUPATIONS?

A blind alley is a road along which one can go for a certain distance, and then no farther. We have to go back and make a fresh start, and we have lost all our time. And so we now give the name of "blind-alley" occupations—a name which every boy should know—to those which seem to offer a road to somewhere, but lead a boy nowhere, waste years which he can never regain, and perhaps even destroy his power to learn something better afterwards.

All who have studied the subject know how important this question is, and boys and girls should all be warned in time of the consequences of going into a "blind-alley" occupation. A boy leaves school at fourteen or sixteen, and can at once get employment which brings in a few dollars a week, but which teaches him nothing. For instance, this may be the case with telegraph boys, as we all may see. After a few years, when the boy is beginning to become a man, and to expect a man's wages, he is, instead, turned off to make room for a younger boy. Since his "blind-alley" occupation has taught him nothing, and has only given him time to forget what he learned at school, he has to seek unskilled and poorly-paid labor, and often can get no work at all. Many scores of thousands of boys and girls in our country are now in these "blind-alley" occupations, and the time has come when we must put an end to a process which causes so much harm. It injures the boys and girls themselves, and it afterwards only too often makes them a burden upon the nation, instead of part of its real wealth.

WHY CAN'T LIGHT TURN A CORNER?

There are several ways in which light can be made to turn a corner, but it is true, and it is one of the most important facts about light, that it naturally travels in straight lines. This does not mean that the light from a lamp travels only in one direction. It travels equally in straight lines in all directions, and since it is a property of light to travel

in straight lines, of course it cannot turn a corner by itself.

But fortunately there are many ways in which light can be made to turn a corner, for there are many ways in which rays of light can be bent or turned. By means of a mirror, or any surface which reflects light at all, light can be made to turn a corner, or any number of corners, so long as at each there is placed a reflecting surface. In just the same way, of course, a ball can be made to turn a corner.

Light can also be readily made to turn a corner by what is called refraction. This is the name given to the bending of a ray which in passing from one thing to another, as from air to water, or air to glass, becomes, as it were, cracked.

WHAT IS A CYNIC?

The word cynic is simply the Greek for *dog-like*, and means a person who has rather a snarling and dog-like kind of temper; at least, that is supposed to be the origin of the name. The great argument of the cynics in ancient Greece was that men must give up luxury and beauty, and even cleanliness, and any kind of decent human comfort. As we can imagine, they were not pleasant people, though it cannot be denied that they showed much courage and suffered much discomfort. One of the most famous of the cynics, pretending to be very humble, used to show himself in a cloak full of holes—a perfect instance of what has been called "the pride that apes humility." This particular cynic lived in the time of Socrates, who said to him, "I see your vanity peeping through the holes in your cloak."

WHICH IS THE BIRD WITH THE LONGEST TAIL?

We all know that the peacock's tail, which is so beautiful when opened out, is very long when it is closed up; but there are some birds in Japan that have tails as much as twelve feet long, and when they walk about in the open air special train-bearers support their tails, so that the feathers may not be dragged through the dust and dirt. These birds are a variety of the barn-door fowl. In the same way pouters and fantail pigeons have been developed in Europe from the common pigeon. The long-tailed cocks are reared at Shinowara, a village in the island of Shikoku. That they

may not damage their tails they are kept in high, narrow cages, lighted at the top.

The bird naturally remains on the perch at the top, its tail hanging gracefully down. It is seldom allowed outside its cage, and then it walks in the open air for about half an hour, followed by its tail-bearer. Occasionally it is washed in warm water, and allowed to dry its feathers in the sun.

For traveling, special long, narrow boxes are used, and the feathers are bent as little as possible. The root of the tail in these birds is much stronger than it is in an ordinary cock. Even the feathers on either side of the body grow to an enormous length, and hang down with the tail feathers to a depth of three or four feet, so that the tail has the appearance of being not only very long but also very bushy.

WHY DOES A LEVER MAKE A WEAK MAN STRONG?

In the case of all levers and pulleys the principle is the same. No form of lever or pulley makes power out of nothing. The secret lies somewhere in the special way in which the power is applied to the weight which it has to move.

If we think of a simple case of a man using a long iron rod to dislodge a piece of rock, by pressing the rod, near its lower end, against something firm, we shall see that the two ends of the lever—that is, the rod—move through very unequal distances in the same time. We can see this for ourselves by holding a pencil across the edge of anything, with nearly all the pencil on one side. Then, if we tilt it up and down, one end moves through a very much smaller distance than the other in the same time. The more unequal the two arms of the

pencil, the greater is the difference between the distance moved by the two ends of the pencil.

That is what happens when a man is levering up a stone. He has not strength enough to move the lower end of the lever by pressing there, but he can get the necessary movement there by spending his power over a greater distance at the top end of the lever. Less power is required there, but it is required to act through a greater distance. So the work is done, and the law that power cannot come from nowhere holds good in this case as it does in all others, no matter if it does seem otherwise.

WHERE WERE THE FIRST LIGHT-HOUSES BUILT?

It is difficult to think of a time so far back that there were no lighthouses to guide the sailor on the pathless sea and protect him from dangerous reefs, shoals and cruel rocks. No doubt the very first lighthouse was the light set in the window by the fisherman's wife to bring his boat safely home. And today, we have lighthouses whose flashing or revolving lights can be seen for many miles at sea and which protect the dangerous coasts all over the world.

It is said that the first lighthouses were built in that oldest of countries, Lower Egypt, but it is so long ago that no one knows just when. These early timers were very crude. The fuel was placed in a large pot and hung from the end of a pole which projected from the tower

like the flagpole from a window. The first regular lighthouse built to guide sailors was stationed on a cape of Asia Minor, in the Troad, and a Greek poet 660 years before Christ mentioned it, so we see that this poet gave us something



A Bird's Tail is Feet Long.

more valuable than his poetry, which no one ever reads.

WHY IS A LIGHTHOUSE CALLED A PHAROS?

One of the most famous lights of history is the Pharos of Alexandria. It was built of white marble and stood on the island of Pharos at the entrance of the great harbor. From its summit, 400 cubits above the sea, an immense beacon fire of wood could be seen for thirty miles. It was completed 280 years before Christ, in the reign of Ptolemy Philadelphus, and was one of the Seven Wonders of the World. It took its name from the island on which it stood, and after that date Roman lighthouses were spoken of by this name, "pharos." This beautiful structure, 100 feet on a side built in terraces, lasted for 1,600 years, until destroyed by an earthquake. The lighthouses at the English port of Dover, and the French port of Cologne, were built by the Romans and were supposed to be the first lighthouses ever built in Western Europe. The Colossus of Rhodes, another one of the Seven Wonders of the World, may also have been a lighthouse.

The earliest lighthouse which was built on a rock in the ocean, swept by waves, and which is still standing, was built at the mouth of the Gironde River in France. The Cardouan Light was begun in 1584 and finished in 1610, but earlier towers are said to have been built upon this very rock by Louis le Debonnaire about 805, and later by Edward, the Black Prince. The light which shone from this tower was at first made by the burning of an oak log, and later by a coal fire, which was lighted in an open basket or grate, called a "chauffer."

To-day "the light that shines over the sea" is of many kinds. It is made by electricity, by a kind of gas called acetylene gas, and by oil gas, which is largely used in the United States and England. Oil for this purpose is brought to the lighthouse in large iron tanks and stored in a room near the entrance, and from there it is pumped up into the lantern. By means of lenses, prisms and reflectors, the rays which would naturally turn upward or downward are thrown out in a horizontal line. The electric light of Heligoland, an important island in the North Sea, is equal to the enormous number of forty-three million candles, and the Highland Light at Navesink has sixty

million candle power, and flashes its light a distance of twenty-eight miles over the water.

WHICH IS THE OLDEST LIGHTHOUSE IN THE UNITED STATES?

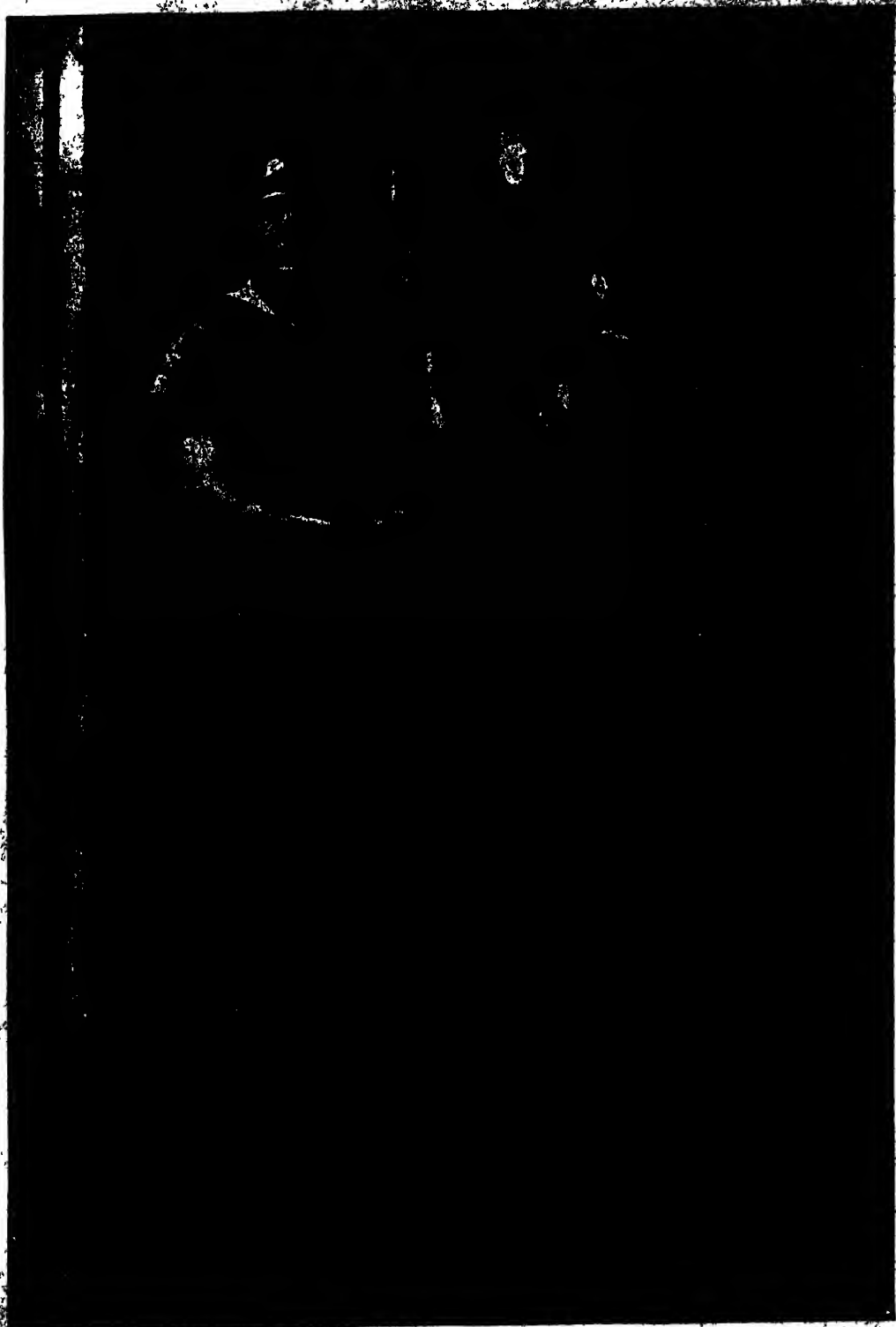
The oldest lighthouse in this country is the Boston Light, which has been shining from Little Brewster Island ever since the year 1716. Some one may ask whether it is the very same lighthouse which was built then, but a little thought will answer that question, for we know what power there is in the winds and waves beating constantly against the rocks to wear them away, and a lighthouse would be far more easily destroyed than solid rock. The lighthouse which stands on the island to-day was built in 1819. During the Revolution it was destroyed and rebuilt no less than three times.

WHY ARE LIGHTSHIPS USED INSTEAD OF LIGHTHOUSES?

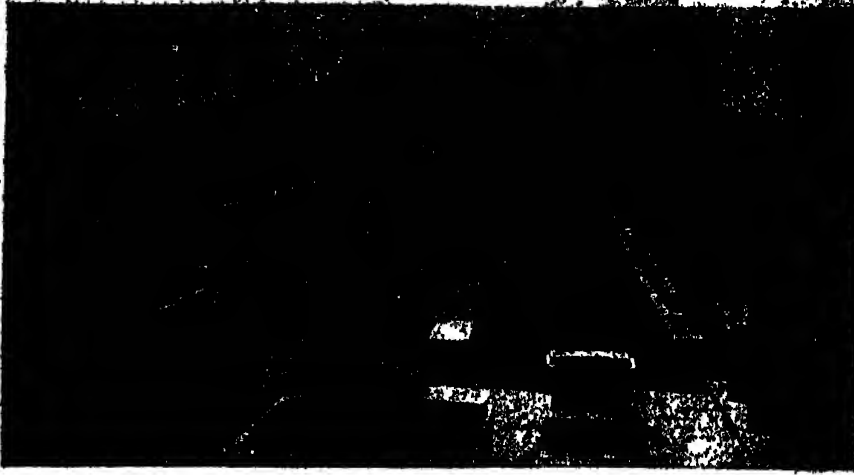
The most famous lighthouses in the world are built miles out at sea and the task of building such a tower in these dangerous places is one to awe the stoutest heart and tax the utmost skill. And there are many places where no lighthouse can be built on account of the terrific force of the wind and the waves and the strength of the currents. These reefs or treacherous shoals or sunken rocks are protected by lightships. One of the best known in this country is the Ambrose Channel Light, off Sandy Hook. The lightship off Cape Hatteras guards the dangerous Diamond Shoal. There is another at the Nantucket Shoal, and many more all along the New England coast. All these ships are equipped with wireless telegraphs, which is a safeguard to the ships.

There are lonely spots where no man could live without the danger of losing his mind, and here lights are stationed, called "unattended lights," because they are worked by wonderful clockwork devices, and no one goes near them for periods varying from three months to a year. The light burns all the time or is lighted at regular hours by mechanism, or, more wonderful still, by a Swedish invention which makes use of the sun. As the sun rises and sets, its increasing or decreasing light works a valve which controls the flow of the gas so that the light begins to shine after sunset and goes out after sunrise.

THE FAITHFUL SENTINEL OF POMPEII



When the city of Pompeii was overwhelmed by burning ashes and destroyed, a brave soldier stood at his post to the last, watching death come towards him. When, 1,700 years after, the diggers found the ruins of the city buried in the earth, they found the soldier's body lying where he had kept watch. Sir Edward Poynter has painted this picture of the sentinel who was "Faithful unto Death," and it hangs in the Liverpool Art Gallery.

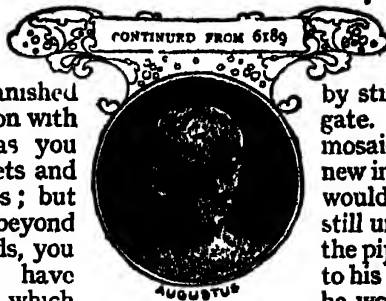


WHAT I SAW AT POMPEII

NOTHING will live longer in the mind of a visitor than this city of a vanished life, a sight to look upon with doubting eyes even as you walk through its streets and sit down in its houses; but something almost beyond belief, when, afterwards, you fill in all that you have seen of this city which passed out of the world in a night.

There are mightier ruins in the world than Pompeii, things bigger to look at, things bigger in history, things that stir the mind more in themselves; but nowhere is there so great an area of ruin so well restored to its former appearance as this.

Here is a city nearly two miles round, with streets of houses, with market-places and shops, with gardens and squares and monuments; all so well preserved that if the tenant of one of these houses were to come back to life, and were set down at one of the three gates of Pompeii, he would walk along the old pavement he helped to wear down over 1800 years ago, and would walk to his house quite



naturally, and perhaps recognize his old home, in some cases, by still fresh paintings at the gate. He would find the mosaic floor still almost as new in many of his rooms; he would find beautiful statues still unbroken; he would find the pipes which brought water to his bath still in their place; he would find the bath still

capable of holding water; and he would find things at home in such a condition that no power would make him believe that his home had been buried in the earth over 1,700 years. It is difficult to think of anything so hard to believe as Pompeii. Every little detail has been preserved. Here, in a kitchen, is a pan on the fire, resting on the ashes which were boiling water more than fourteen hundred years before the discovery of America.

It is this which makes Pompeii almost too true to be true—the preservation, through all that dread catastrophe, through all these nineteen centuries, of *the very life of the moment when Pompeii heard its doom.*

The architecture of this vast ruin is

wonderful. The freshness of some of the color is as if it were done yesterday. The sense of luxury is everywhere, and there is even a sort of atmosphere that comes up from the long ago. But the miles of ruin, the well-planned houses fit for kings, the famous frescoes and mosaics, which are in some cases our only picture-record of historical events, are, with all their value and their tremendous interest, not the most impressive fact of Pompeii. Pompeii is unmatched as something preserved through nearly twenty centuries, preserved in big and in little so that identity is easy; but Pompeii is unique in the world because it has stamped for ever upon the earth itself the life of a single moment in the dim mists of Time. Remember, a moment; not a period, not a day, not even an hour—but a *moment*, for one may see the pan boiling on the fire, the loaf of bread half eaten, the meat being cooked for dinner, the wine still in the bottle, the ink still in the pot, the key still in the door.

You may visit the cellar where sixteen people hid themselves when the calamity came, where the master of the house was found with the key in his hand, a slave close behind him with money and valuables. Outside is the courtyard from which they must have fled.

You may even see the pain on a man's face as he died on that terrible day. There were no cameras to take photographs then, but Nature can do without cameras.

In the ashes where they lay, the features of these poor people were pictured as in a photograph; the ashes hardened so that the likeness was preserved through all the centuries; and when these bodies were discovered there came to Signor Fiorelli a wonderful

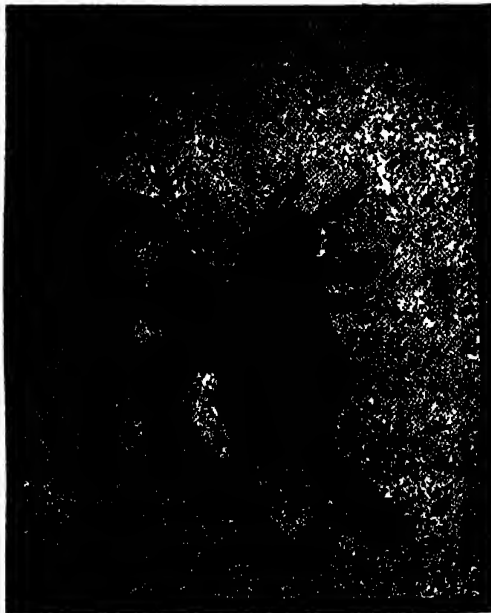
idea. Removing the bones carefully, he filled the space with plaster, making a perfect image of the figure which had lain there, hidden from sight for more than a thousand years. And here to-day lies the image of a man who died in that terrible ruin, his face wrought with the very pain of death. Not all the destructiveness of Vesuvius, not all the weight of the earth for nineteen hundred years, has changed a muscle of this dead man's face, and his image lies here to-day that all the world may see something of that awful moment when a great city vanished from the earth. Near by him lies the image of a dog.

And here, near the homes in which they lived, lie images of other men and women—men and women no longer now, but only forms, statues that Michael Angelo or even a greater than he never could have rivaled.

It is almost tame, after this, to think of all the wonderful things the guide would show you if you allowed a guide to hide the interest of Pompeii from you, as guides do; but there are three wonders of Pompeii.

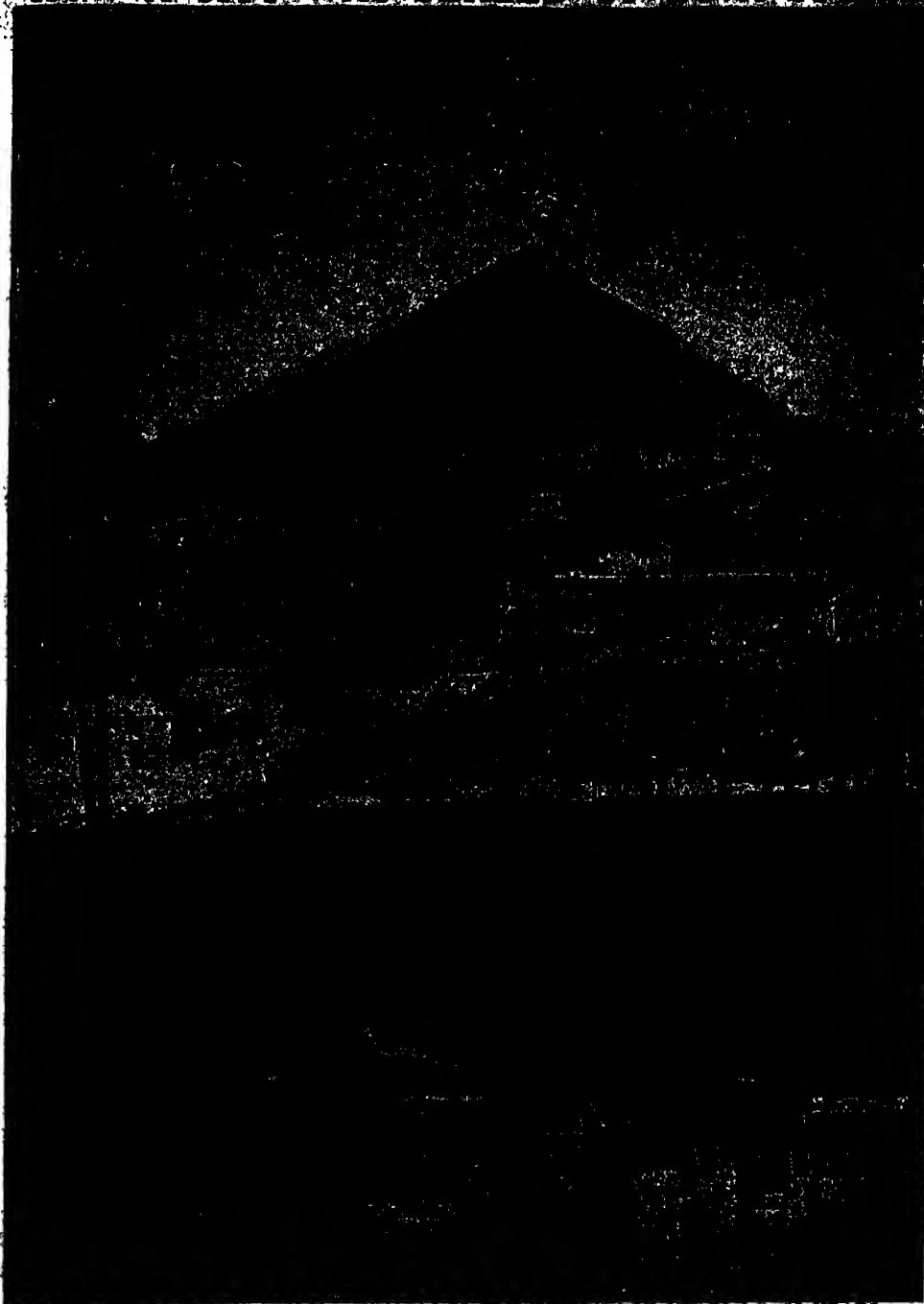
There is the wonder that it should ever have been built, so rich in art, so poor in vision; there is the wonder that so much of it has been preserved from so tremendous a destruction; and there is the wonder that it should have been lost hundreds of years and found again.

It must have been an interesting city in ancient times, and there is no wonder that Rome flocked here to live its lighter life, that an emperor and statesmen and poets and nobles had houses here. And what houses they were, occupying a whole street sometimes, lavish in paintings and marbles. It is odd to stand at the gate of one of these houses and look at the mosaic in the floor, a picture of a dog, with the old *Cave Canem*, "Beware



A mosaic in the floor of a doorway in Pompeii, with the words *Cave Canem*, "Beware of the dog"

HOW A CITY WAS SEALED UP BY A STORM



THE BEAUTIFUL CITY OF POMPEII, AS IT LAY HIDDEN FOR NEARLY 2,000 YEARS

No more terrible fate ever happened to a city full of life and gaiety than that which befell Pompeii, with its splendid buildings—temples, palaces, baths, and theatres—in which were stored many treasures of art. On the morning of August 23, in the year 79 A.D., it must have been a brilliant sight to see. But within a few days Pompeii and the neighboring city of Herculaneum, lay buried, to be remembered only in name for the next seventeen hundred years. Mount Vesuvius, which had been sleeping for centuries, woke up suddenly in the year 63, and caused an earthquake that destroyed a great part of Pompeii. The people rebuilt the city, and had almost finished it when a still more terrible calamity overtook them. The mountain poured forth a storm of burning ashes, which fell upon the city and buried it completely. Then heavier cinders poured forth from the mountain and sealed it up, as shown in this picture.

POMPEII COMES OUT OF THE EARTH AGAIN

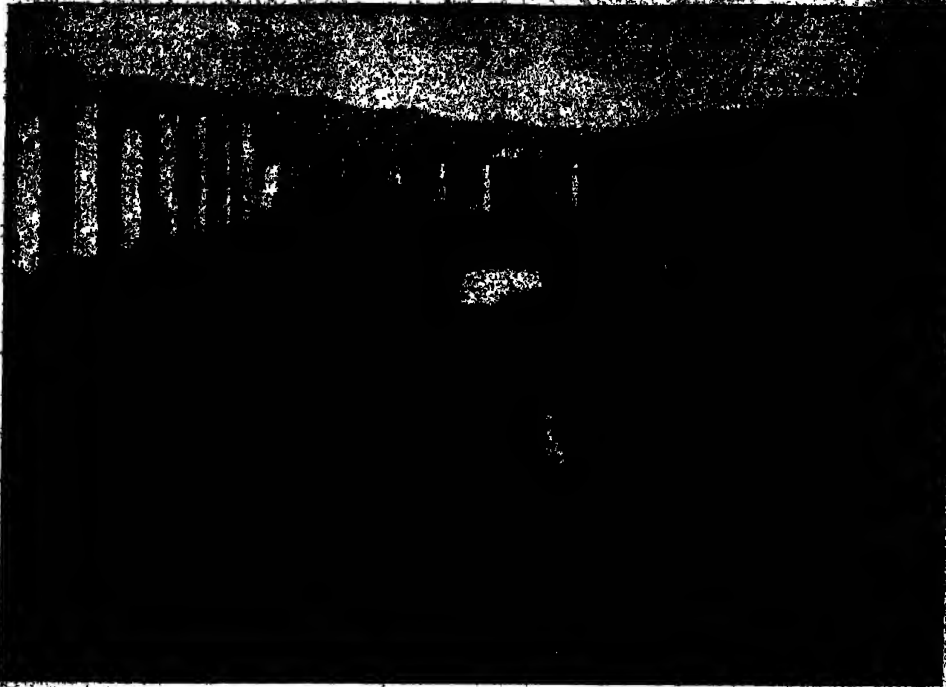


Pompeii, buried for more than seventeen hundred years, has in the past century been brought to light, and here we see it as it is to-day. Here are streets and pavements, houses and shops, theatres and temples, law-courts and market-places, in which we can walk about as the old Romans did.



This shows one of the main streets of Pompeii, which has been completely unearthed. The curbstones and stepping-stones, paths and roadway, are exactly as in the days of the Emperor Titus. Nearly all that we know of Roman life and manners has been revealed by the discoveries at Pompeii.

BEAUTIFUL COLUMNS COME TO LIGHT



This is the Basilica at Pompeii. The word basilica comes to the Romans from the Greek and means either a court of law or a sort of merchants' exchange. In form it was a long rectangular hall supported by great columns. Later both the word and the kind of building were borrowed for churches.



The view of the ruins of Pompeii given on the preceding page was taken from above, and does not show the open spaces shown in this, which is even more interesting, if there can be said to be degrees of interest in this marvelous city. Notice how clearly the beautiful fluted columns stand out. Soon after the destruction of the city, the ruins were reached by tunneling down through the lava, and many valuable objects were removed. Then the people went away, and the ruins were forgotten. Photographs from Brown Bros.

of the dog," under it; and it is wonderful to stand in the garden of another house, with flowers growing now where they grew then, with lovely little statues still unbroken where they were first set up, with the gateway still fresh with paintings, with color everywhere, and with people moving to and fro, and to imagine to yourself that the lord of the house is giving a party and you are among the guests. No great imagination is called for at Pompeii, for if imagination did not people these houses and these streets the very stones themselves would cry out. One thing you

corner of Pompeii was left unadorned: it is astonishing to see the splendid friezes in the arcades, where things were bought and sold: even the butcher and the fishmonger, with their benches next to an emperor's temple, carried on their unlovely work in an artistic environment. It is not easy to understand how rich this place must have been until you have seen the museum, because it has been the habit in the past to carry off the art treasures of Pompeii to Naples. The city itself is to-day without roofs, like a city after a great fire has done half its work, with beautiful



A PAN STILL ON A FIRE IN A KITCHEN IN POMPEII, AFTER BEING BURIED 1800 YEARS

must do, however, before you go to walk about these streets of destruction: you must go upstairs and downstairs in the museum in Naples, where what is left of all that was beautiful and all that was useful in Pompeii is gathered together. Here is a collection that must stir the duller mind that ever wandered mechanically about a great museum. Here are the marbles—frescoes, statues, columns, tombs—that made Pompeii a beautiful place to walk about in.

Hundreds of pieces crowd the ground floor of this museum, most of them in marble or in bronze, and most of them from the villas and temples and streets and spaces of this stricken city. No

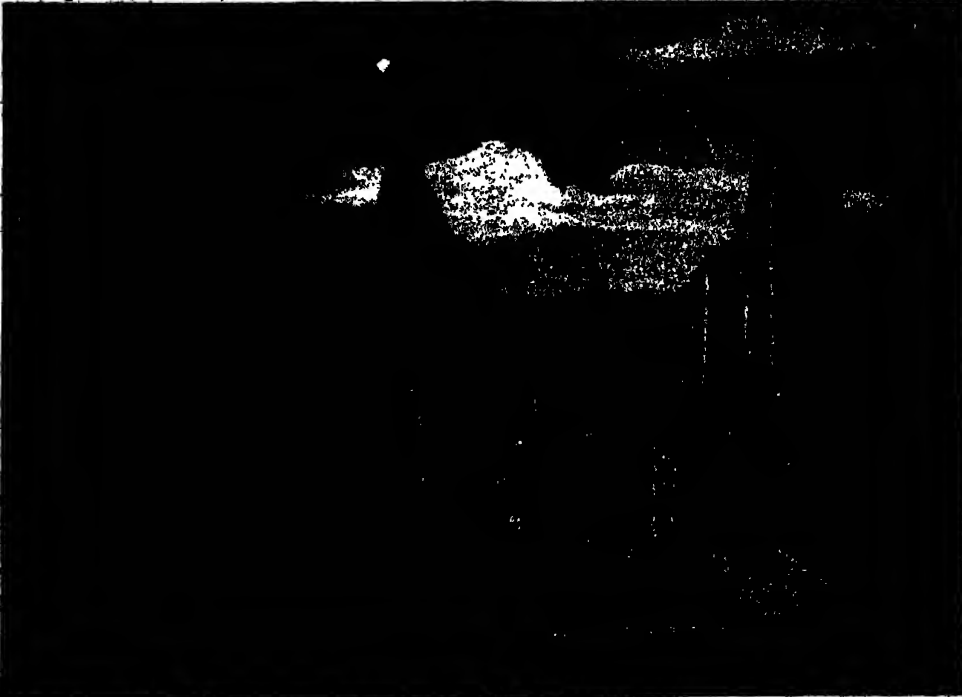
things left only inside houses and courtyards.

For, of course, the treasures of Pompeii can never be brought together again. How much of this artistic wealth must have been destroyed in that year 79! How much was carried off by the inhabitants, who tunneled underneath the lava ashes to find their treasures. How much lies still buried in the earth, waiting for the spade to bring it into the light of day! Only half, perhaps, of this field of ruin has been recovered since the work of excavation began in the eighteenth century. Men are still at work digging up houses and gardens and marbles, and nobody knows whether there may be a new piece of

A HOUSE IN POMPEII—AS IT WAS AND AS IT IS



The wealthy noblemen of Rome had beautiful palaces at Pompeii, to which they went in the hot summer months, just as people go to their country houses nowadays for a vacation. Here is the atrium, or drawing-room, of a fine house in Pompeii. The house belonged to a man named Cornelius Rufus.



Here we see the same room as it appears to-day. In the middle is a marble water-basin, set into the floor and surrounded by mosaics, and on the margin are the supports of a rich marble table. Rooms opened out all round, and in the distance can be seen the remains of the peristyle—an open court.

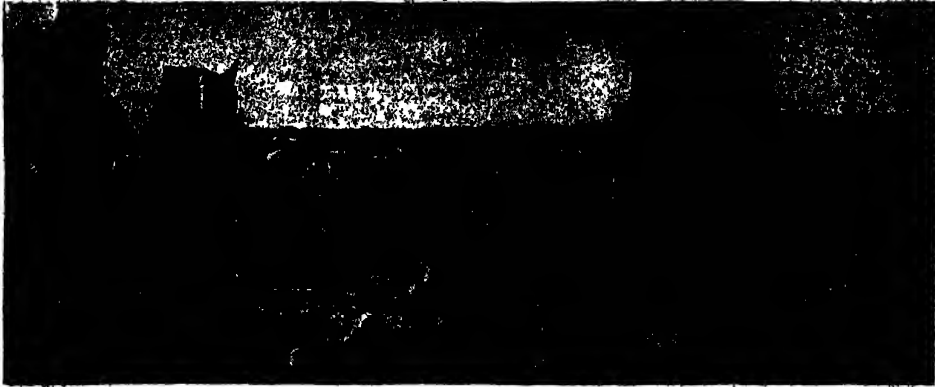
sculpture, or some beautiful fragment of mosaic.

For hundreds of years this great treasure-house was unknown to the world, for the ancients left it covered up when they had taken from the ruins all that they thought it contained, or all that they thought worth digging for. But Vesuvius spat out dust enough to bury Pompeii nearly twenty feet deep, and so it happened that the ancients robbed the surface only, leaving the depths to be trampled down or built over or neglected throughout the Middle Ages. Then a farmer would dig up a piece of marble, and perhaps it would be a man's hand. A peasant found a piece of cloth as he dug his garden one day, and used it to clean out his oven. It did not soil, it did not burn—because it was a piece of asbestos cloth in which

brought out to the light of day to show us the life of these people of long ago.

Here are the things with which they beautified their homes—little bronzes for the mantelpiece, hundreds of pictures from their walls, lovely vases of every kind. Here are locks and keys, and every sort of thing still used in a kitchen; pots and pans, and salt cellars, and scales, and bottles, and knives; things for boiling twenty eggs at once; little stoves; actual beds that people slept on, chairs they sat in; stocks they put their prisoners in, in which four skeletons were found; safes for their valuables; pens they wrote with; ink still in the bottle, though now dried up, and even doctor's instruments made of bronze.

In one room are the cakes that were on the table when the calamity came, a loaf half cut, meat in a saucepan



A PAVEMENT LAID ON A STREET IN POMPEII OVER 1800 YEARS AGO

some ancient Roman had wrapped the ashes of a dead friend!

Coming to Pompeii by train, the traveler sees green orchards with stone columns rising among the trees, filling the mind with wonder as to what lies beneath. We come, too, upon whole fields black with lava, which remind us that even while men dug up one civilization Vesuvius covered up another.

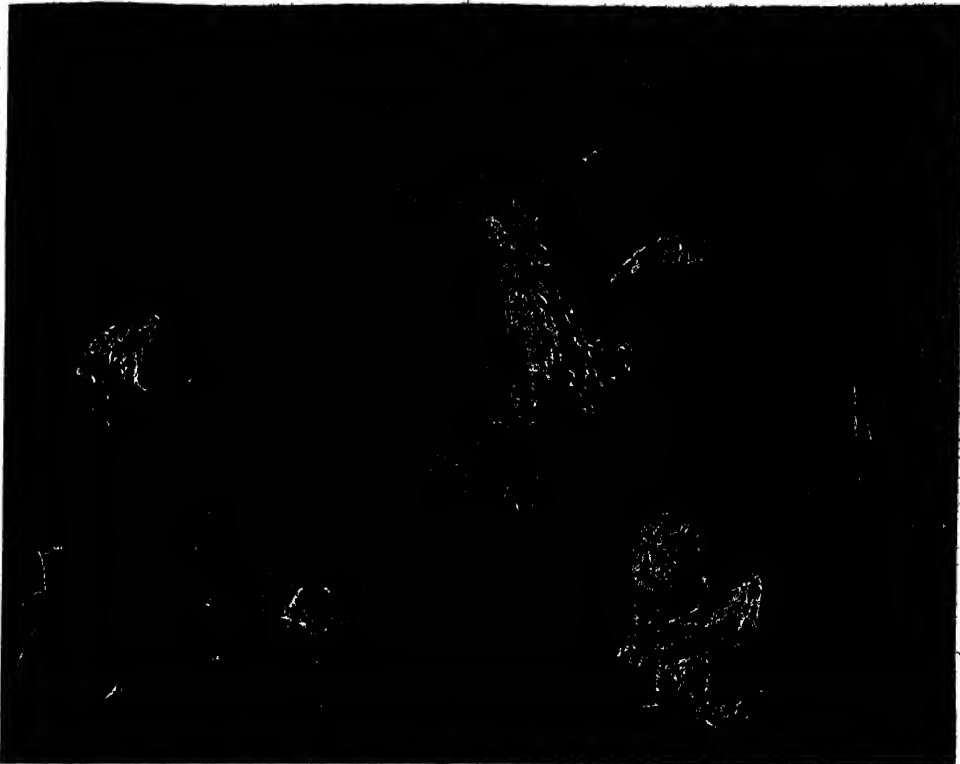
The busy spades and pickaxes, which have revealed to the eyes of men this vanished city, have brought up out of the earth much more than a collection of marbles. The ground floor of the Naples Museum is filled with monuments, but come upstairs and see a *hundred thousand things*. That is not a guess, or a mere general number; there are, indeed, a hundred thousand things, counting coins and brasses and everything

ready for cooking, peas, beans, prunes, raisins, fruits ready for dessert. Everything to eat seems to be in the room, fragments from the last dinner-tables of Pompeii, preserved through all but two thousand years by Mother Earth. And there is one thing you will not believe. There is an egg—*unbroken*! Think of it! Vesuvius destroyed this city, drove off its population, cut off at least 2,000 lives, all in an hour. It buried the city under thousands and thousands of tons of dust, buried it in the earth through all the years while Europe has been made. Vesuvius could do this, yet could not break an egg!

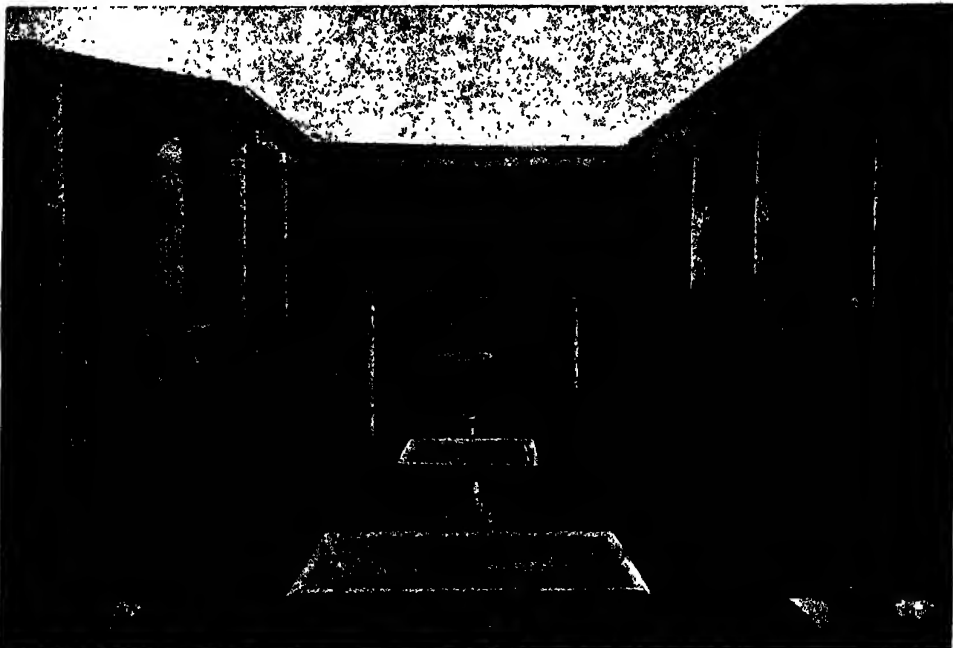
Pompeii is something to see and never to forget, for no other work of man's hands has ever been buried in the earth and come out so wonderful.

CONTINUED ON PAGE 539.

A POMPEII GARDEN THEN AND NOW

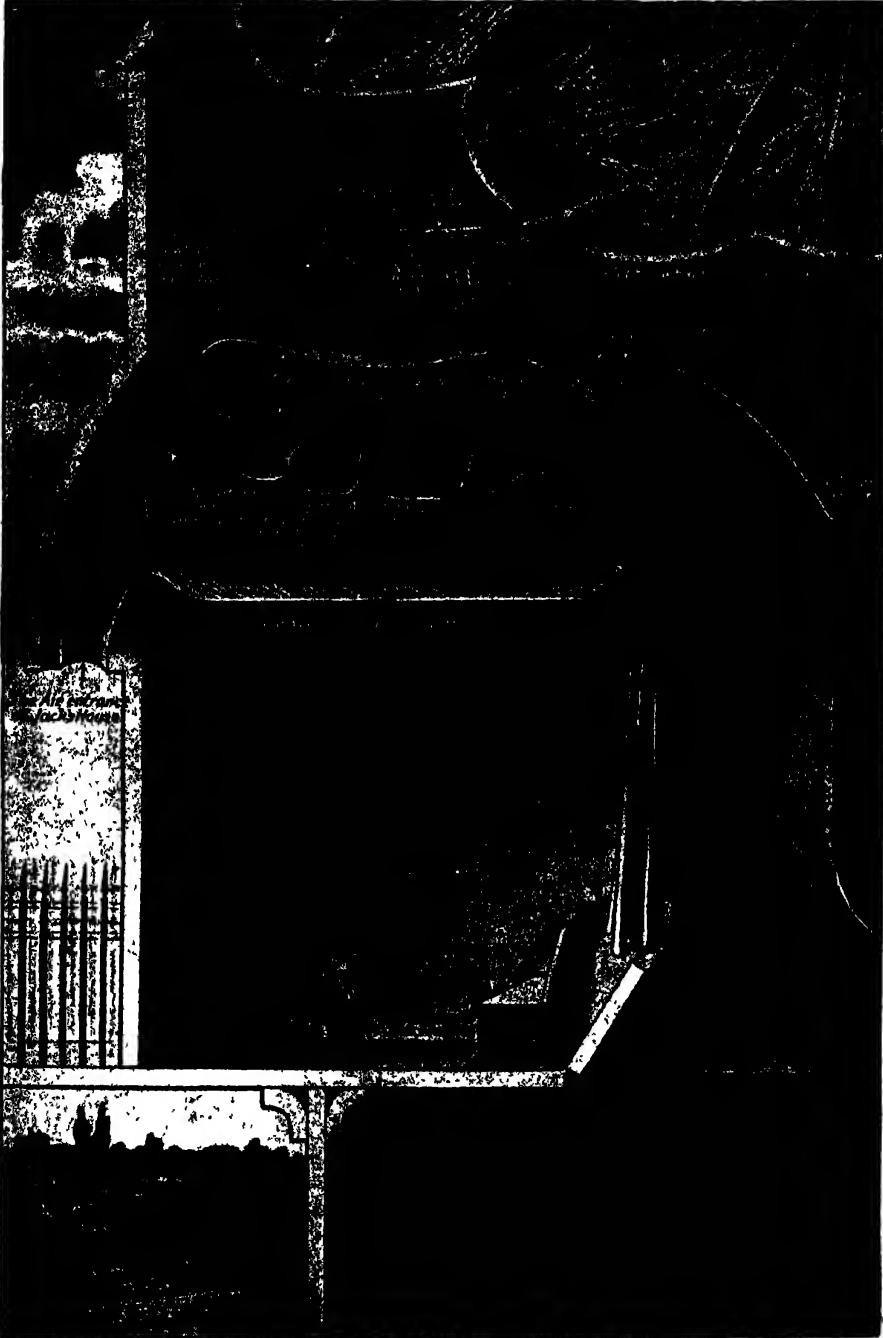


This shows life in one of the houses of Pompeii. The children are playing with their mother in a court similar to the one seen in the lower picture. - These courts, inside the house and quite separate from the outside garden, were laid out with shrubs, flowers and fountains, and adorned with sculptures.



One of the wonders of the world is the way in which Pompeii has been preserved, so that we can see much of it almost as it appeared two thousand years ago. Here is the open court of a house of the first century as it may be seen in this century. It is almost identical with its original appearance.

WHY WE MUST BREATHE THROUGH THE NOSE



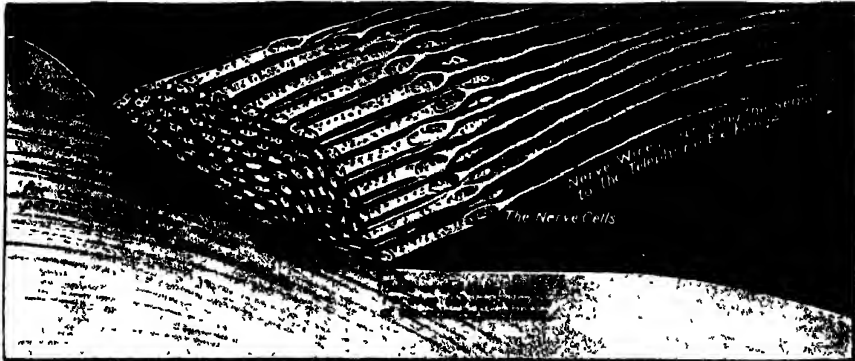
You will notice that all sensible people breathe through the nose and not through the mouth, and this picture shows us why they do so. The little hairs which line the channels of the nose act as a filter, keeping back dust and other harmful things, and the value of this filter is lost if we breathe through the mouth, and consequently allow dust and germs to have free entrance into the lungs. This picture shows also the little cells which enable us to smell. When we smell a thing, small parts of it break away and touch the cells which live on the nerves of smell, and these cells are able to detect a particle of musk that weighs only a thirty-millionth of a grain, the sense of smell being more acute even than the eye aided by the microscope.

CHIEFTAINS OF A VANISHING RACE



The red men of North America, who held sway in the vast countries where now fly the Stars and Stripes and Union Jack, are fast passing away. They must change their nature or die, or they will soon be extinct like the Aztecs of South America. A few picturesque race they have always lived, and among their tribes men with noble souls, even the chief desecrated the story. The Last of the Mohicans, page 157.

The Book of OUR OWN LIFE



This picture will give us some idea of the nerve-cells of smell, which line the upper part of the nose. When we smell a rose or anything else a small particle of the rose or whatever it may be is drawn to these cells, and the sensation is carried by the nerves to the brain, which recognizes it.

JACK'S FRESH AIR SUPPLY

IF the Architect of Jack's house had forgotten to provide for its proper ventilation the house could never have been built at all. The pity is that men are allowed to build any kind of houses without providing for the breath of life to flow through them; for Jack's house has to spend much of its time in houses built by men, and if they are not properly ventilated half the value of his own ventilation system is lost.

Jack's house needs air in order that his countless living servants may breathe. If we had said *burn* instead of *breathe*, that would have been an equally true saying, for we may look upon Jack's house as a wonderful furnace, which requires a draught of air if it is to burn properly. The fuel which Jack eats, and which his chemists cook so skilfully, would be of no use to Jack unless he had a supply of air with which to burn it.

Burning, as we have already learned, means combining with oxygen which we get from the air, and this goes on everywhere all through Jack's house, and all through the houses of all living creatures, animals, or plants, whether they live in the air or at the bottom of the sea. Therefore every living thing requires and has a



ventilation system which is suited to its body.

The centre of Jack's ventilation system is Jack's middle story, where are his bellows and, as we have seen, his pump is placed. But we must begin at the beginning, and we find that a special channel has been provided, just above the front door of Jack's house, for the air to enter.

The whole of the outside of Jack's body is more or less exposed to the air, but none ever enters through his skin, though a little does enter through the walls of ordinary houses. The living houses of some animals and plants are ventilated more or less through their walls. A plant breathes all over its surface, and a frog breathes partly by its skin. But Jack depends for his air supply entirely upon what enters his windpipe, the great air tube that runs down his neck into his chest, and if he cannot receive enough air through that tube he will die.

Jack's mouth, or hall, and his nose both lead to his windpipe, and air can reach it either through his hall door or through the two holes above it called his nostrils. If Jack runs hard, or swims hard, or if he has a cold, he is bound to open his hall door, and get a larger quantity of air that way,

but as a general rule air should not be admitted through the hall at all. Unless Jack has something to say, or something to swallow, his hall door should be kept closed. The Bible rightly says that God put the breath of man's life *in his nostrils*, not in his mouth; and, indeed, Jack may well remember this very good rule—*Shut your mouth and save your life*.

It is true that it feels easier to breathe through the mouth than through the nose. Why, then, should the mouth not be used, and why is it actually dangerous to allow the front door to be constantly open for ventilation?

Well, it is dangerous for many reasons, but one of them is easy to guess, for it is the very reason which often prevents us from opening our front doors. If we carelessly leave our doors open burglars may get in; and if Jack keeps his front door open burglars will get in there too—microbe burglars which may smash and destroy his house or burn it. There are several other reasons, but we cannot understand them until we study those openings, and what is behind them.

THE IMPORTANCE OF THINGS YOU MAY NEVER HAVE THOUGHT OF

If we look at our nostrils we shall usually notice a number of fine hairs. They act as if they were a kind of grating or sieve, and keep back tiny flies or specks of dirt which might otherwise enter with the draught of air. Now, from the two nostrils right onwards until the air reaches the great lungs, or bellows, themselves, it has to pass one thing after another which, though we cannot see it or understand it so easily, plays exactly the part of those hairs.

When we study the inside of the nose, we find that it has various channels or passages from the nostrils to the back of the throat. Instead of being straight these passages are most crooked and twisted, so that the air can never flow through the nose without striking against the inside of it at the turns, and having to go round corners. The inside of the nose is moist, and can readily be made moister whenever the air is rather dry or cold. The nerves that govern the blood-vessels inside the nose see to that. Thus, not only is the inside of the nose crooked and moist, but it is also warm. Nor is that all. The moisture produced inside the nose by the chemists

which line its walls is distinctly poisonous to microbes. It is to some extent an antiseptic, like carbolic acid, or the acid which poisons microbes in the food when they reach Jack's great oven.

What all this means we can only learn by very carefully catching some air which has been breathed in through Jack's nose, just before it reaches his windpipe, and comparing it with the air in the room from which Jack breathed it.

THE FILTER THAT SURPRISES THE CLEVEREST BUILDERS

If we do this—as we can in a very wonderful way—we discover that Jack's nose is the filter of his ventilation system—a filter which does everything that can be done by the cleverest human builders, and much more besides. We can best prepare ourselves to understand and value this filter rightly by studying the construction of specimens of the best air-filters which have been made by men.

At a well-known hospital there are rooms for performing surgical operations. All the air which enters them does so through a special shaft, which it can only reach by passing through a filter. Now, this air-filter is made of a great screen of hanging cocoanut fibres, down which water is always dripping. As the air passes between these dripping fibres, it is filtered of dust and microbes to a large extent, and is also moistened. If the water were warmed, the air would also be warmed by the filter. Then a fan drives it down the shaft and into the rooms, and there the people who breathe it all filter it again, if they are wise and well, by breathing through their noses.

HOW THE AIR WE BREATHE IS CLEARED AND MOISTENED

The nose is the great air-filter of Jack's house, and it does just what the filter does in those beautiful rooms. But the nose is a better filter than anything man can make, and it does more for Jack's house than the cocoanut fibres and the dripping water can do.

For when we compare the air taken from the back of Jack's nose with the air outside, we find, first, that the inside air contains fewer microbes, and practically no dust, except of the very tiniest kind; and we find, next, that it is moistened, containing much more water-vapor than it did before; then we find, again, that it is warmed, for it has passed

over a large surface lined with plenty of warm blood.

How wondrously this filter of Jack's excels all the filters made by men we shall see. To begin with, not only has air to enter through this filter, but it also has to return by it.

THE AIR THAT TRAVELS ROUND CORNERS AND THROUGH CHANNELS

No human builder can make such an arrangement as this. He must always have an inlet shaft, where the filter is, and an outlet shaft. At the hospital the inlet shaft sends the air straight to the patient's place, and the outlet shaft is near where the lookers-on are, so that nothing can travel against the stream of air from them to hurt him. But in Jack's house the inlet shaft and the outlet shaft are one and the same, which is unlike any other system of ventilation in the world.

Now, the inlet has purposely been made difficult so that the air may be filtered and moistened and warmed. It has to flow round corners and through narrow places, but it would be an inconvenience if the air had to do this in coming out. Therefore the lowest of the three channels which we find inside the nose on each side is short and is almost straight, and we have discovered that practically all the air, on going in, travels through the middle and the upper pair of channels, but practically all, on coming out, travels by the lower pair of channels, though one pair of nostrils suffices for both purposes.

THINGS THAT WE NOTICE ON A VERY COLD DAY

This is really a beautiful discovery, for when first we study the shape of the inside of Jack's nose we cannot understand why the two upper pairs of channels should be so crooked and narrow, if the lower pair could let the air in. The fact is that, though the lower pair is open all the time, it and the others are just so placed that the in-draught is almost entirely through them, and the out-draught almost entirely through it. Further, if the upper and middle pair of channels are blocked, which too often happens, the lower pair still remains, and the air will do better to enter through them than through the mouth.

Indeed, this is an adaptable filter in every way. When the air is warm and

moist, it is allowed to pass quickly and easily through the filter; but when it is cold and dry, and would do harm inside Jack's house, it is compelled to pass more slowly, and is exposed to more warmth and more moisture.

This beautiful arrangement is worked by those servants of Jack who sit in his upper story, and control, by nerves, the size of every blood-vessel in his body, as the train despatchers in their tower control the traffic over the railway tracks which run in and out of the railway station. When they get messages saying that the air is rather too dry and cold, they give orders to flood the lining of his nose with warm blood, by relaxing the walls of all the blood-vessels inside it.

THE FILTER THAT POISONS ITS ENEMIES

In order that the orders shall be effective, we find that the lining of Jack's nose is extremely loose on the bony walls, and so it can be stretched and filled with a great quantity of blood whenever it is feared that Jack is being supplied with air so cold and dry that it would injure the inside of his bellows.

We have seen that the inside of the filter produces something that poisons many microbes. When we blow our noses—which we should do more respectfully after learning what our noses are!—we clear the filter of a mixture of dirt, dust, and microbes, and if we consider how soon a used handkerchief becomes unpleasant, we realize what might happen to our lungs if we had no filter to breathe through.

But if we examine the lining of this filter with a microscope, we find still more wonders such as no other filter can show. Nearly the whole of its surface is covered with tiny living servants of Jack—cells which produce a steady flow of moisture to purify the air. These cells have a sort of hairs—called *cilia*, which is Latin for eyelashes—sticking out from them into the air-channel. These cilia form a sort of broom, which the cells that bear them keep brushing in one direction, so as to keep the filter clean. Their action never stops, even when we sleep, but goes on night and day.

These ciliated cells line the whole of Jack's ventilating shaft, from the nostrils down to the bellows, or lungs, themselves. When Jack has a "cold," and especially

when he has bronchitis, he loses the services of these excellent servants for a time, for multitudes of them are killed by the microbes that have succeeded in getting past the sentinels and have made Jack ill. Not until new ones take their place is Jack quite comfortable. One other interesting fact about these cells is that, like the white cells of the blood, which have wonderful powers of movement also, they are independent of Jack's officials in his upper story. No nerves order them about, and they move as they know they should, on their own account.

Very different are the cells which line one special part of Jack's nose, just where the incoming current is strongest. They are not merely connected with nerves, but are themselves nerve-cells.

THE SERVANTS WHICH GIVE JACK THE SMELL OF A ROSE

These servants of Jack are of a far higher kind than the cells which wave their cilia. They do not show, under the microscope, anything so wonderful as the "ciliary movement" of the other cells, but their power of feeling is really far higher and far more wonderful. When certain gases or particles of material come in with Jack's air-current and reach these sentinels, they are known and recognized as good or bad, or as not mattering one way or the other; and this smelling, as we call it, is done by the smell-sentinels in Jack's nose, together with a part of his brain, with a special kind of nerve-cells, which are experts at smelling, and can communicate with every other part of Jack's brain.

As a matter of fact, Jack's house is far from being as well supplied in this respect as the house of his dog. In human beings, the sense of smell has lost most of its importance, and the marvelous sentinels for seeing and hearing have taken the place of smell for most purposes—such as recognizing Jack's friends and enemies.

Nevertheless, these sentinels that line the upper part of the air-filter are not to be despised, even though they are stupid in comparison with the smell-sentinels of many animals.

SENTINELS THAT MAY SAVE JACK'S LIFE

These little servants can still recognize many bad things. For instance, if the gas has not been properly turned off at night, Jack's sentinels tell him that it is

escaping, for they recognize some of it in the air-current which passes them. But for this warning Jack might go on, breathing the gas until it overcame the unsleeping cells that govern his bellows, and he would stop breathing for ever and would wake up from sleep no more.

Also these sentinels give Jack much pleasure in the sweet scents of flowers in the country; and they are very useful in helping him to enjoy his food, for the scent of his food gets into his nose, and, indeed, a good deal of what he calls the taste of his food is not really taste at all, and should go, not to the credit of his hall porter, but to that of the sentinels in his nose. The best proof of this is that Jack has a very dull taste of food when he has a cold, and the smell-sentinels are drowned in fluid for a time, so that the smell of the food cannot reach them and his favorite dishes seem to him dull and unpalatable.

THE LITTLE TUBE OF AIR THAT HELPS US TO HEAR SOUNDS

Lastly from each side of this filter there runs a tube which carries a little air to the inside of Jack's ear so that there is air inside as well as outside Jack's ear-drums, and sounds can move then freely. This tube has a long difficult name—the Eustachian tube. The name was given to it in honor of a famous Italian named Eustachio who lived in the eighteenth century. This great man found out what a faithful servant this tube is in Jack's house.

Such is Jack's filter. If it is not in good working order—as when part of the lining is overgrown and he has adenoids—he becomes a "mouth-breather," and suffers in many ways. No one can afford not to use this living filter, which stands at the beginning of the ventilation system, and without which Jack's house can never be as clean and habitable and durable as it should be.

If Jack is to gain the full benefit of this wonderful filter, unless when he is talking or shouting, he will always breathe with his mouth shut, whether he wakes or sleeps. If he does this, almost all the air that enters his house will be cleansed and purified, and the tiny enemies that would take away his health will be stopped at the outer gates by the trusty sentinels who stand on guard.

CONTINUED ON PAGE 6307.

The Story of FAMOUS BOOKS

A FAMOUS BOOK ABOUT A FAMOUS VOYAGE

RICHARD HENRY DANA was a member of a distinguished family of Boston, and, as he tells us, made the voyage around the Horn for his health while a student at Harvard. His book tells of the life of a common sailor, of the strange Spanish land of California, of the manners and customs of the people, and of his thoughts and feelings on the voyage. Sailing ships had almost disappeared when the Great War began, but it has called some of them back. This book is one of the best descriptions we have of life on one of these vessels in the first half of the last century. After Mr. Dana's voyage he returned to his studies, was graduated at Harvard, and later became a famous lawyer. He wrote a book for sailors telling them what their rights were, and to the end of his life was interested in the sea, and in sailors. This book is read as much to-day as when it was first published.

TWO YEARS BEFORE THE MAST

RICHARD HENRY DANA, when an undergraduate at Cambridge, determined to take a long sea voyage in order to cure a weakness of the eyes which threatened to spoil his career. Accordingly he shipped on the brig *Pilgrim*, bound from Boston round Cape Horn to the western coast of North America, a long and tedious voyage. The first day at sea the captain of the ship addressed the crew as follows: "Now, my men, we have begun a long voyage. All you've got to do is to obey your orders and do your duty like men,—then you'll fare well enough;—if you don't, you'll fare bad enough, I can tell you. That's all I've got to say. So below, the larboard watch."

Dana was utterly new to the sea, and felt very keenly all the discomforts of a sailor's life. At first he lived in the steerage, which was filled with coils of rigging, spare sails and old junk. There were no berths built into the sides, no nails for their clothes, no light allowed to find anything with, and the rolling of the ship pitched everything about in great confusion. In the darkness and noise the new sailor had the added misery of seasickness. While in this state he was first ordered aloft to reef topsails, and

the wonder is that he did not pitch headlong upon the deck. So matters continued for two or three days till the weather bettered, and Dana was able to take good solid rations of salt beef and biscuit. From that time he was a new being. By degrees the strange names of things on board became familiar to him, and he entered upon the regular duties of sea-life.

He soon realized what a busy life this was which he had adopted. The discipline of the ship required every man to be constantly at work when he was on deck, except at night and on Sundays. When not actually engaged in sailing the ship, the vessel was overhauled and repaired by the men. Her running gear had to be kept, at all times, ready for any emergencies. When it was not the sails, then it was the rigging which needed examining. All the yarn used on board a ship for the numberless ropes or yards that showed signs of wear had to be made on board, and the mending of this "chafing-gear," as it was called, gave constant employment during the entire voyage. Added to this was all the tarring, greasing, oiling, varnishing, painting, scraping and scrubbing required in the course of a long voyage. On wet days, instead

of allowing the men to stay in sheltered places at work they were separated in different parts of the ship and kept busy picking oakum. All these things young Dana was to find out during the long months of the journey, when the monotony of the days was broken only rarely by the sight of a sail.

Through the late summer and autumn the ship ran on with few adventures upon her southerly course towards Cape Horn. Once they were chased by pirates for a day and a night, but escaped by spreading more sail, and putting out all lights on board at nightfall. In the latitude of the La Plata the first of the gales struck the brig, and early in November they sighted the Falkland Islands, as they ran between them and the mainland of Patagonia. They were now in the region of Cape Horn and saw the Magellan Clouds and the Southern Cross, the latter the brightest stars in the heavens. All were prepared for the dreaded Cape weather and it did not delay its onslaught upon them. A fine specimen of it appeared in a great cloud of dark slate-color which drove upon them from the southwest; in an instant the sea was lashed into a fury and it became almost as dark as at night. The sailors did their best to take in sail, but a cold sleet and driving hail almost froze them to the rigging, while the sails were stiff and wet, and the ropes and rigging covered with sleet and snow. The little brig plunged madly into this tremendous sea, and wave upon wave rushed in through the portholes and broke over the bows. An order was given to furl the jib, the sail forward of the foremast, and two of the men had to go out on the bowsprit. An old Swede (the best sailor on board) sprang forward and Dana followed him. As the vessel plunged downward the men were submerged in the sea up to their chins, and for some time could do nothing but hold on. No help came to them from the decks, for the fury of the wind and the breaking of the seas against the bows prevented any shout from being heard. At last they succeeded in furling the jib, after a fashion, and came in to find all snug and the watch gone below, for they were soaked through and very cold.

Day after day passed with but little change in the weather. The men's clothes were all wet through and they

had no means of drying them, and could only change from wet to wetter. They could not read or work below, for the hatches were closed and everything black and dirty. Their only relief was to come below when the watch was out, wring out their wet clothes, hang them up and turn in and sleep until the watch was called again. At night and morning they were allowed a tin pot full of hot tea sweetened with molasses, which, bad as it was, was the only warm food they had, and which with their sea biscuit and cold salt beef comforted them somewhat. One of their shipmates then fell overboard heavily dressed with heavy coils of rope around his neck. He could not swim and probably sank immediately. This depressed the sailors seriously, for the man had been a fine seaman and a good shipmate, and one out of their little company was seriously missed. As was the custom, the captain immediately held an auction of his things, and in this way the trouble and risk of keeping them through the voyage were avoided, and they were generally sold for more than they were worth ashore.

At the end of November they sighted land and made out the island of Juan Fernandez rising like a deep blue cloud out of the sea. The captain and some of the crew went ashore to get fresh water, and they found that the island was used by the Chilean government as a convict settlement, with a governor, a priest, half a dozen taskmasters, and a body of soldiers to keep the prisoners in order.

They saw neither land nor sail from the time of leaving Juan Fernandez until their arrival in California. Dana's lot was lightened by being allowed to shift his berth from the steerage into the fore-castle and bunk and mess with the crew forward. The weather in the Pacific was fair and the climate never extremely hot or cold. At last, early in January, they came to anchor in the spacious bay of Santa Barbara after a voyage of one hundred and fifty days from Boston.

The brig expected to trade upon the coast of Upper California, but instead of going first to Monterey, the seat of government and only custom house, where the cargo had to be entered, the captain had orders to put in at Santa Barbara and wait for the agent, who lived there and transacted all the business for the firm. Accordingly as soon as they had

picked him up they set off for Monterey. The weather had changed again and for four days of rainy, stormy weather they beat up the coast against a violent head wind. After some delay they entered the Bay of Monterey and found good anchorage where they could lie safe from the "southeasters," which were the chief difficulty on this coast.

Then the trading began. A room was fitted up in the steerage, and the men, women and children were rowed out to the vessel to look at the cargo and make their purchases. The Pilgrim's cargo consisted of everything under the sun—from Chinese fireworks to English cart-wheels—and everything was sold very dearly, partly because of the heavy duties laid upon imports, and partly because of the great expense of the long voyage. The ship's crew was busy from daylight until dark in the boats, carrying goods and passengers, for everybody made a holiday to come on board and see the strange vessel even if they only bought a packet of pins. Thus engaged the men gained considerable knowledge of the character, dress and language of the people, and Dana himself borrowed a grammar and dictionary from the cabin and soon got the name of a linguist among the crew.

As soon as the trade slackened at Monterey the brig left for Santa Barbara, and there the crew had their first glimpse of what taking up their own cargo would mean. They had come for hides, and had supposed when they left Boston that it was on a voyage of eighteen months or two years at most. It was found that the hides were scarce and yearly becoming scarcer, and it would take a year at least to collect their own cargo; in addition, they learned for the first time that they had also to collect a cargo for a large ship belonging to the same firm which was soon to come up the coast. The gloomy prospect of two or three years at the end of the earth, on a coast almost solitary, and in a country where there was no law, hung over the ship and the men became miserable and indifferent. Trouble was brewing and nothing went right. The captain quarreled with the cook, and disputed with the mate, and finally tied two men up to the shrouds and cruelly flogged them for fancied insolence. After this the comfort of the voyage was at an end.

The book is one of the best descriptions we have of life in California under Mexican rule, for the state did not become a part of the United States until fifteen years after Dana's voyage. Scattered through it there are many incidents of persons and places which enable us to understand the country of those days, when there were few white men in the whole region. Those of unmixed Spanish blood called themselves Castilians, and were very proud of the fact. Most of them, however, were part Indian. The Indians themselves were little more than slaves. Little farming was done, but there were great herds of cattle and horses. A good horse could be bought for ten dollars or less, and the cattle were chiefly valued for their hides and tallow. Thousands were killed for these alone, and of course fresh meat was sold for almost nothing.

For some time the brig cruised up and down the coast, collecting hides till she had as many as her hold would carry, and she then sailed to San Diego, where the firm had a hide-house built to hold forty thousand hides. There was not a man on board who did not go a dozen times into the house, and look around and make a calculation of the time it would require to fill it. As the hides came rough and uneven from the vessels they were piled outside the house and then carried through a regular course of pickling, drying and cleaning, in order that they might keep during a warm voyage. For this purpose an officer and some of the crew were left ashore and Dana was among the shore gang. He and the others made their home in one corner of the large hide-house, which was boarded off, and in which there were berths, a table, a small locker for pots and spoons, and a hole cut to let in the light. The officer had a similar small room where he lived in state.

His companions on the beach, other than the ship's crew, were, for the most part, Sandwich Islanders, or, as they called themselves, "Kanakas." Dana liked these men for their kind-heartedness and intelligence and soon learned to speak their language, though they had no books and very little education. Whatever one of these men had, they shared with the others,—money, food, clothes, even to the last pipe of tobacco to put in their pipes. Then there was a

of allowing the men to stay in sheltered places at work they were separated in different parts of the ship and kept busy picking oakum. All these things young Dana was to find out during the long months of the journey, when the monotony of the days was broken only rarely by the sight of a sail.

Through the late summer and autumn the ship ran on with few adventures upon her southerly course towards Cape Horn. Once they were chased by pirates for a day and a night, but escaped by spreading more sail, and putting out all lights on board at nightfall. In the latitude of the La Plata the first of the gales struck the brig, and early in November they sighted the Falkland Islands, as they ran between them and the mainland of Patagonia. They were now in the region of Cape Horn and saw the Magellan Clouds and the Southern Cross, the latter the brightest stars in the heavens. All were prepared for the dreaded Cape weather and it did not delay its onslaught upon them. A fine specimen of it appeared in a great cloud of dark slate-color which drove upon them from the southwest; in an instant the sea was lashed into a fury and it became almost as dark as at night. The sailors did their best to take in sail, but a cold sleet and driving hail almost froze them to the rigging, while the sails were stiff and wet, and the ropes and rigging covered with sleet and snow. The little brig plunged madly into this tremendous sea, and wave upon wave rushed in through the portholes and broke over the bows. An order was given to furl the jib, the sail forward of the foremast, and two of the men had to go out on the bowsprit. An old Swede (the best sailor on board) sprang forward and Dana followed him. As the vessel plunged downward the men were submerged in the sea up to their chins, and for some time could do nothing but hold on. No help came to them from the decks, for the fury of the wind and the breaking of the seas against the bows prevented any shout from being heard. At last they succeeded in furling the jib, after a fashion, and came in to find all snug and the watch gone below, for they were soaked through and very cold.

Day after day passed with but little change in the weather. The men's clothes were all wet through and they

had no means of drying them, and could only change from wet to wetter. They could not read or work below, for the hatches were closed and everything black and dirty. Their only relief was to come below when the watch was out, wring out their wet clothes, hang them up and turn in and sleep until the watch was called again. At night and morning they were allowed a tin pot full of hot tea sweetened with molasses, which, bad as it was, was the only warm food they had, and which with their sea biscuit and cold salt beef comforted them somewhat. One of their shipmates then fell overboard heavily dressed with heavy coils of rope around his neck. He could not swim and probably sank immediately. This depressed the sailors seriously, for the man had been a fine seaman and a good shipmate, and one out of their little company was seriously missed. As was the custom, the captain immediately held an auction of his things, and in this way the trouble and risk of keeping them through the voyage were avoided, and they were generally sold for more than they were worth ashore.

At the end of November they sighted land and made out the island of Juan Fernandez rising like a deep blue cloud out of the sea. The captain and some of the crew went ashore to get fresh water, and they found that the island was used by the Chilian government as a convict settlement, with a governor, a priest, half a dozen taskmasters, and a body of soldiers to keep the prisoners in order.

They saw neither land nor sail from the time of leaving Juan Fernandez until their arrival in California. Dana's lot was lightened by being allowed to shift his berth from the steerage into the fore-castle and bunk and mess with the crew forward. The weather in the Pacific was fair and the climate never extremely hot or cold. At last, early in January, they came to anchor in the spacious bay of Santa Barbara after a voyage of one hundred and fifty days from Boston.

The brig expected to trade upon the coast of Upper California, but instead of going first to Monterey, the seat of government and only custom house, where the cargo had to be entered, the captain had orders to put in at Santa Barbara and wait for the agent, who lived there and transacted all the business for the firm. Accordingly as soon as they had

picked him up they set off for Monterey. The weather had changed again and for four days of rainy, stormy weather they beat up the coast against a violent head wind. After some delay they entered the Bay of Monterey and found good anchorage where they could lie safe from the "southeasters," which were the chief difficulty on this coast.

Then the trading began. A room was fitted up in the steerage, and the men, women and children were rowed out to the vessel to look at the cargo and make their purchases. The Pilgrim's cargo consisted of everything under the sun—from Chinese fireworks to English cart-wheels—and everything was sold very dearly, partly because of the heavy duties laid upon imports, and partly because of the great expense of the long voyage. The ship's crew was busy from daylight until dark in the boats, carrying goods and passengers, for everybody made a holiday to come on board and see the strange vessel even if they only bought a packet of pins. Thus engaged the men gained considerable knowledge of the character, dress and language of the people, and Dana himself borrowed a grammar and dictionary from the cabin and soon got the name of a linguist among the crew.

As soon as the trade slackened at Monterey the brig left for Santa Barbara, and there the crew had their first glimpse of what taking up their own cargo would mean. They had come for hides, and had supposed when they left Boston that it was on a voyage of eighteen months or two years at most. It was found that the hides were scarce and yearly becoming scarcer, and it would take a year at least to collect their own cargo; in addition, they learned for the first time that they had also to collect a cargo for a large ship belonging to the same firm which was soon to come up the coast. The gloomy prospect of two or three years at the end of the earth, on a coast almost solitary, and in a country where there was no law, hung over the ship and the men became miserable and indifferent. Trouble was brewing and nothing went right. The captain quarreled with the cook, and disputed with the mate, and finally tied two men up to the shrouds and cruelly flogged them for fancied insolence. After this the comfort of the voyage was at an end.

The book is one of the best descriptions we have of life in California under Mexican rule, for the state did not become a part of the United States until fifteen years after Dana's voyage. Scattered through it there are many incidents of persons and places which enable us to understand the country of those days, when there were few white men in the whole region. Those of unmixed Spanish blood called themselves Castilians, and were very proud of the fact. Most of them, however, were part Indian. The Indians themselves were little more than slaves. Little farming was done, but there were great herds of cattle and horses. A good horse could be bought for ten dollars or less, and the cattle were chiefly valued for their hides and tallow. Thousands were killed for these alone, and of course fresh meat was sold for almost nothing.

For some time the brig cruised up and down the coast, collecting hides till she had as many as her hold would carry, and she then sailed to San Diego, where the firm had a hide-house built to hold forty thousand hides. There was not a man on board who did not go a dozen times into the house, and look around and make a calculation of the time it would require to fill it. As the hides came rough and uneven from the vessels they were piled outside the house and then carried through a regular course of pickling, drying and cleaning, in order that they might keep during a warm voyage. For this purpose an officer and some of the crew were left ashore and Dana was among the shore gang. He and the others made their home in one corner of the large hide-house, which was boarded off, and in which there were berths, a table, a small locker for pots and spoons, and a hole cut to let in the light. The officer had a similar small room where he lived in state.

His companions on the beach, other than the ship's crew, were, for the most part, Sandwich Islanders, or, as they called themselves, "Kanakas." Dana liked these men for their kind-heartedness and intelligence and soon learned to speak their language, though they had no books and very little education. Whatever one of these men had, they shared with the others,—money, food, clothes, even to the last pipe of tobacco to put in their pipes. Then there was a

large number of dogs, who were useful in guarding the beach at night. These same dogs, and a few chickens, made up the entire population of the beach.

The men turned out every morning at the first signs of daylight, and allowing a short time for breakfast, got through their labor between one and two o'clock, for there was a regular amount of work to do each day, and when that was done the time was their own. Just before sundown, the dry hides were beaten and put in the house and the others in their various stages of preparation covered over. The evenings were their own and were usually spent at one another's homes. The work was hard, disagreeable and tiring, but they became hardened to it, and the feeling of freedom made up for much. Through the season other vessels came to the beach to discharge or pick up hides, and the crews came ashore every evening and made a varied gathering from almost every country under the sun. The Pilgrim, too, from time to time brought fresh cargoes of hides, and the news that the company's large ship, the Alert, had arrived, and that their own captain had taken charge of her and gone up to Monterey with her.

Dana was becoming very anxious as to his own future. If he had to stay with the Pilgrim for four years, his chances of another career would be gone forever, for he would be a sailor in tastes and nautical knowledge, and his companions at college would have gone on and left him far behind. He became then eager, as indeed were all the crew, though for different reasons, to get home. But if the worst came to the worst and he was forced to stay at sea the best he could do was to qualify himself for an officer, and for that purpose must learn practical seamanship on board ship, and must leave his hide-curing and join in the cruising upon the coasts. When the Alert arrived he obtained permission from the captain to exchange with one of the crew and accordingly entered upon a new life at sea once more.

The new ship was better in many respects than the Pilgrim, in order and cleanliness, in discipline and good feeling. Dana had mended and generally overhauled his wardrobe during his time ashore and in spare time now had nothing to do but read when he could find a rare book among the chests of the crew.

But this was too good to last and rough weather came on, when all hands were ordered on deck to make or trim sail, and the men's clothes got wet through again as they had done off Cape Horn, and again there was no place to dry them. So the winter through there was little difference in the seasons, and the months were given up to collecting the tale of hides that the company expected and taking them down to the hide-house to be prepared for the voyage.

At last in March came the first assurance that the voyage was really drawing to a close. The captain gave orders for the ship to go down to San Diego, to discharge everything from the ship, clean her out, take in hides, wood, water, etc., and set sail for Boston. There followed six or eight weeks of the hardest work they had yet seen, from the gray of the morning till starlight, with only just time to swallow their meals. The hides were stowed in the hold by hand, and then "steved" or forced down, by which a hundred hides are pressed into a place where one could not be forced by hand. The crew was a cheery one, and filled with the hope of home, and songs rose and fell in tune with the work. All this time they lived upon nothing but fresh beef,—fried beefsteaks three times a day,—morning, noon, and night. A whole bullock lasted but four days, but all were in perfect health and needed the heavy food to keep up with the heavy work and exposure.

The Pilgrim was not returning to Boston, but Dana knew that the owners through the influence of his friends had arranged for him to go back in the Alert and his heart was easy. One day he received a summons into the cabin, and going aft found his own captain and the agent there. Captain T—— turned to him.

"Dana, do you want to go home in the ship?" he asked.

"Certainly, sir," Dana replied. "I expect to go home in the ship."

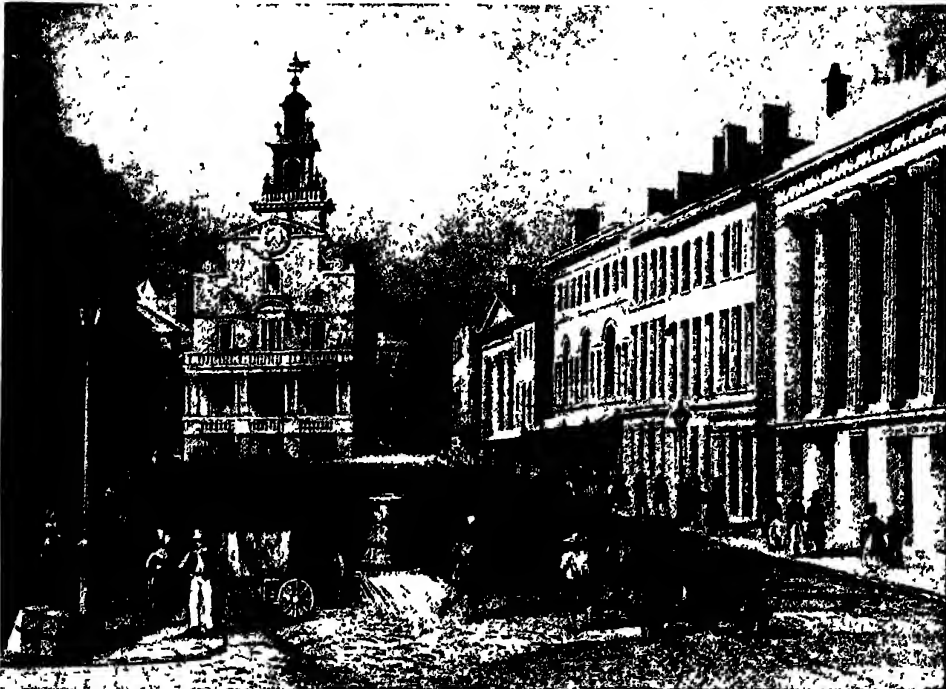
"Well," said he, "you must get some one to go in your place on board the Pilgrim." Such a blow was so unexpected that for a moment Dana was completely taken aback. As soon as his wits came to him he told the captain plainly that he had a letter in his chest informing him that the owners had written the captain to send him home in the

Alert. His firmness enraged the captain, and had he been friendless and poor, there is no doubt that he would have been condemned to spend two more years in California.

With over forty thousand hides, thirty thousand horns, and barrels of otter and beaver skins, the Alert pulled up anchor and set sail. The ship was only half manned, and loaded so deep that every heavy sea washed her fore and aft, the forecastle leaked, and the journey round the Horn had to be made in the depth

As the ship neared the home port, great preparations went ahead to make her trim. The rigging was set up and tarred, the masts stayed, the ship scraped and painted inside and out. After a voyage of one hundred and thirty-five days they came up the harbor and by night lay snug, with all sails furled, safe in Boston Harbor, the long, perilous voyage ended.

In those days the life of the common sailor was very hard. The captains had absolute power and many were brutal and cruel. The members of the crew could



This is a picture of State Street, Boston, at the time that Dana made his famous voyage. The old State House still stands, but the other buildings are different. Costumes have changed as well as everything else.

of winter, yet the men made the best of it, though drenching rain kept them in a state of perpetual discomfort, and scurvy made its ravages upon the crew. All fresh food soon gave out and things were beginning to look bad when they hailed a brig outward bound from New York which gave them potatoes and onions and thus arrested the progress of the dread disease. Scurvy is hardly known these days, but then it was common. It is caused by a lack of fresh fruits or vegetables. Then salt provisions were the usual food, and prisons and ships often had many cases. Now fresh meat can be carried in the ice chest, and more attention is paid to carrying vegetables.

do nothing in self-defence while on ship, and except in a case of unprovoked murder, their complaints on shore had little effect. In the story we find many instances of the harshness which sailors were compelled to endure. Sick men were neglected, or set to work when too weak to stand. Everything in the way of clothing the sailor bought from the ship was charged to him at a very high price, and he was lucky if he had any of his wages left when the ship reached the home port after a long voyage. He was compelled to get another ship at once, where he was likely to be just as badly off. It is not surprising that the common sailor was careless and reckless.

A DASH AFTER BIG GAME IN THE JUNGLE



THE HUNTSMAN, HAVING APPROACHED NEAR, MAKES A DASH UPON THE ANIMALS

Giraffes, zebras, elands, and other animals of this kind, always take to flight at the least sound. The hunter who wants to catch them alive has to be very cautious. He approaches them carefully, making no noise, and, keeping himself well out of sight till he is near, rushes out and overtakes the younger animals, that cannot run so fast as the older ones. It is the young animals that are wanted, as they easily adapt themselves to a life of captivity, whereas the older ones remember and pine for the freedom of the wilds, and quickly die.



YOUNG WILD ELEPHANTS BEING LED CAPTIVE BY TRAINED ANIMALS

THE HUNTERS OF THE WILD HOW THE ANIMALS CAME TO THE ZOO

WHEN we spend a day at the Zoological Park, in New York, and see the enormous number of animals, birds, and reptiles there, we cannot but feel that we have around us a little model of the whole animal world. Of course, there are still many species of animals and birds not represented, for there are many which it is impossible to keep alive in captivity. However, we have before us a collection drawn from all quarters of the world.

They have come from the vast spaces of Australia, from the jungle of India, from the sub-tropical forests of South America, from the rolling prairies of North America, from the burning plains of Africa, from the frozen North, from the little islands where it is always summer; they are taken from the wild highlands of Tibet, from the steep sides of the Alps, from caves and burrows, from the air, and from the sea.

Many of the animals, after their capture, have made long journeys on foot through the desert, have been carried in ships across the sea, and have been treated on their way with as much care and anxiety as if they were royal princes. There are many

CONTINUED FROM 6068



other zoos like the one in New York, not all so well stocked, but still good. There are several good collections in the United States and more than forty in Europe, to say nothing of private collections and a host of menageries.

To get together great families of animals such as these needs a world-wide system of hunting. We can see that this must be so when we look at the elephant, the rhinoceros, and the hippopotamus, with their huge bulk and terrible strength; the lions and tigers and leopards, with their savage natures, their strength, and speed; the bears, with their fierce, slow strength; the monkeys, with their agility and cleverness; the snakes, with their deadly powers.

Probably his own misfortunes first taught man how to capture animals more powerful than himself. The men of old times saw mammoths and other great creatures made prisoners by the marshes into which they wandered; and, desiring food, these men gathered their forces and attacked the imprisoned animals where they were. Then, having practised this for some time, they easily learned how to catch these animals by making

traps for them, simply by digging a pitfall into which the creatures fell. To this day we employ this method for the capture of many of the animals which come to our zoos, particularly for the rhinoceros and the hippopotamus. Men often shoot the parent animals, and capture the young ones as best they can. But the methodical hunter lays his plans more deliberately.

HOW THE HIPPOPOTAMUS AND RHINOCEROS ARE TRAPPED

As we already know, the mother hippopotamus, when she takes her young one out from home to drink at a pool, sends him on ahead, while she brings up the rear, carefully looking out for danger. The hunter seeks the well-beaten paths in the reeds or grass or bushes leading to and from the water which the hippopotamuses take. When he has found one he digs a pit in it and covers it over with boughs. The baby hippopotamus and the mother trot along, and suddenly, as the youngster puts his foot down, the earth seems to open under him, and he disappears from sight.

Now, if it were an open enemy which had attacked her little one, the mother would charge him with all her strength, but this disappearance is so mysterious that she turns round and bolts for home. The hunters come up, slip a noose over the head and front feet of the little one, then raise him from his prison, tie all four legs, and bind him up so that he can be carried away.

A TAME RHINOCEROS AND ITS FRIENDS

Much of the same plan is adopted for the snaring of the young rhinoceros, but here the difficulties are less, for the young rhinoceros is a better-tempered fellow than the other, and can soon be taught to follow his captors like a dog. A rhinoceros captured in Africa at once made friends with a tame goat, a vulture, a stork, and a baboon, and all the way down to the coast these friends were not to be separated. Especially was the young animal friendly with the goat, for it was upon the milk of this creature that it was first fed. The rhinoceros was taken to Germany, but its captors had to send the goat with it, and when it was last photographed it had grown to be quite a big rhinoceros, while the goat was the proud mother of two kids, which also lived with the rhinoceros.

Most of the lions which we see in zoos and menageries were captured when young, though many are born in captivity. They are not taken without a struggle, unless they are very young, for when only six weeks or two months old they make a brave fight for liberty. Therefore, the hunters generally throw a net or cloth over them.

If they are very young, they have to be reared by the kind attention of some other animal. For this purpose goats and kind-tempered dogs are used. Naturally, these animals are a little alarmed at first at the rough and fierce manners of their foster-children, but there is a marvelous power of friendship between a mother animal and baby animals, even if the baby animals are of an entirely different order.

The same practice applies to the capture of tigers as to that of lions. When full-grown lions or tigers have to be taken, it is a much more serious business. Many hunters make the old pitfall; then, when the animal has tumbled in, they lasso its feet and head, and throw a net over it. But often the animal injures itself in its fall, and dies.

A GIANT MOUSE-TRAP SET TO CATCH A BEAST OF PREY

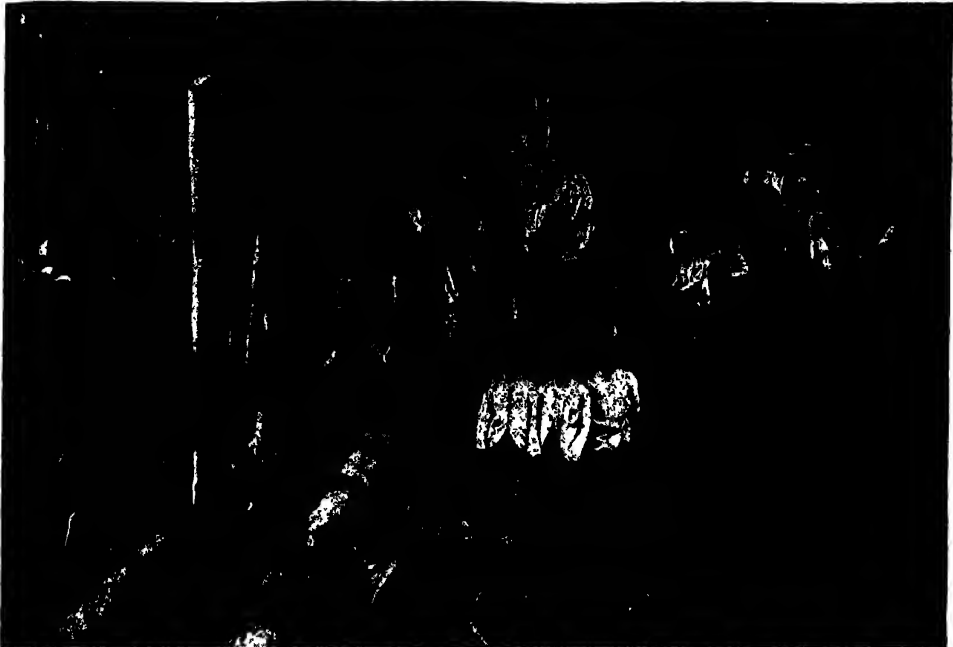
The safer way, therefore, is to set a sort of gigantic mouse-trap. The door leading into the cage is held up by a spring. When the lion or tiger enters, and takes the bait, the spring is released and the door shuts down with a bang. Sometimes a lion, with more cunning than its fellows, suspects one of these traps, and, instead of walking into it, lies down and hides outside in waiting for the men who set the trap. One lion which was trapped got one of its paws shut in by the door, and when the hunters came up to secure the animal, it made a tremendous effort, burst open the trap, and, springing out, killed two of its would-be captors.

The same sort of trap serves for the leopard, the hyena, and the wolf, though the American master of craft, the wolverine, has been known to travel forty miles, stealing the bait from trap after trap set to catch it, and never once entering one of them.

THE SWIFT CHEETAH FAMOUS AMONG INDIAN HUNTERS

The cheetah is one of the animals most commonly trapped in India, where

WATCHING FOR THE WILD ELEPHANTS



The capture of wild elephants alive is a very exciting business, and months are occupied in preparing for the hunt. A great enclosure is built, and hundreds of natives, armed with rifles, drums, and firebrands, surround the haunts of the elephants, and, by frightening them with noise and fire, drive them into the enclosure, of which we see a corner in this picture. They are afterwards secured and tamed.



The driving of the wild elephants into the enclosure is watched by Europeans from a platform built high up in a tree. Any number up to a hundred elephants may be caught at one time in this way. When they have been in the enclosure for some time, tame elephants, which have been trained for the purpose, are driven in, and these occupy the attention of the captives while their legs are being tied to tree-trunks by natives.

the native princes keep packs of these animals for hunting. An interesting thing is that cheetahs, to be good hunters, must be caught wild; those which have been born in captivity are worthless for the work. The natives have a peculiar way of catching these animals. Grown-up cheetahs are wanted, and the grown-up cheetah is the fastest runner in the world. Probably the fleetest thing on legs, next to itself, is the swiftest of antelopes. Should a cheetah see an antelope two hundred yards away, it runs with such amazing speed that it can catch the antelope before it has run four hundred yards. Luckily for the antelopes, the cheetah can run only for a short distance.

When wild, the cheetah, after killing an animal, retires to some secluded spot to sleep off the effects of its meal. When it is hungry, it goes to a place where many cheetahs meet, generally in the neighborhood of a tree. The natives tie running nooses to this tree, and the cheetah gets its head fast in one of these and so is easily captured.

CATCHING THE GIANT GIRAFFE

When men set out to catch giraffes or deer, elands, and other animals from which little or no danger to themselves is to be feared, they approach very cautiously and quietly as near as possible to a herd, then suddenly dash out on their horses into the open in pursuit. Away go giraffes, zebras, and gnus, and gazelles, and antelopes in company. There are young ones with them, and it is these that the men capture. They

really do not want the old ones, for they would be likely to die. Many animals do die in this way, from a mixture of fright and sorrow. The young of wild animals, however, are like children; though they may feel their griefs acutely for the time being, they soon forget the bitterness of their sorrow. The young ones are introduced to cows or motherly goats, which, after a few protests, give the little things all the milk they need, and so fortify them for the long march

which they will have to make night by night, when the hot sun is out of sight, down to some seaport.

THE FIERCE GORILLA THAT DIES WHEN IT LOSES ITS FREEDOM

Men have caught species of nearly all the known apes and monkeys. Yes, even young gorillas and chimpanzees and gibbons have been taken. Hunters have never yet managed to take an adult gorilla alive, and probably never will, so fearful is its strength, so unyielding its ferocity. If they did,

it would probably die by starving itself. Even the little ones cannot be kept alive, so homesick are they, and so delicate through the change of climate and of food. No gorilla has had a longer life in captivity than the famous one that lived in the Bronx Zoo for almost a year.

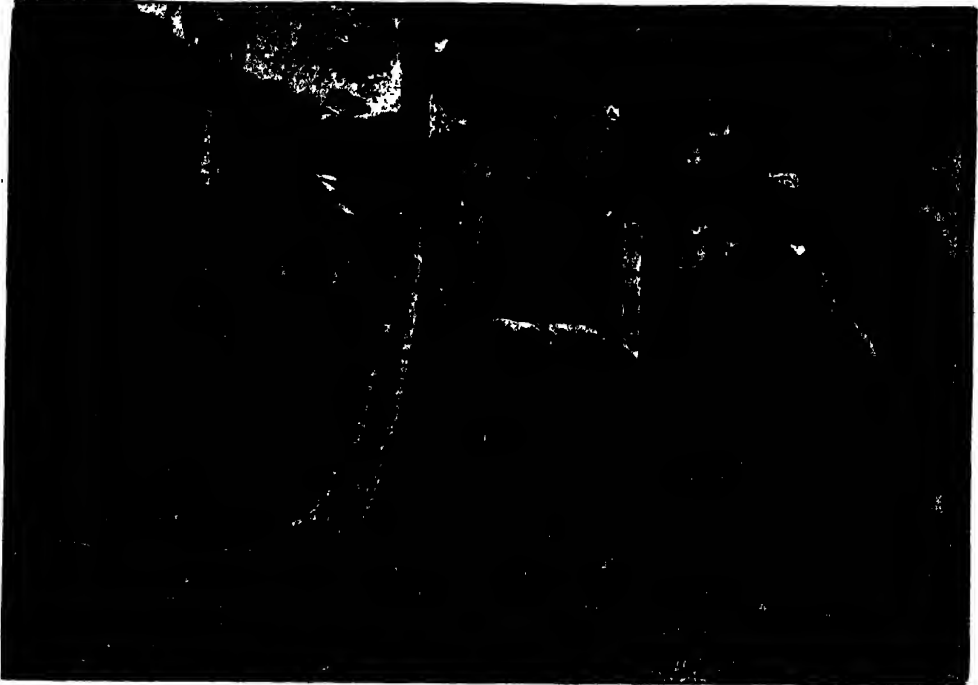
Hunters find it easy to catch monkeys and baboons. There are all sorts of ways of catching monkeys, for they are great thieves, and will go wherever food is to be got. In India the monkey is sacred, because an old tradition tells that a monkey god helped to do a great work for the people of the country.



THE GORILLA IN A TREE

No man has ever caught a grown-up gorilla alive.

A WILD ELEPHANT BEING TIED TO A TREE



Tame elephants are very skilful in assisting hunters to tie captured animals, and they seem to enjoy the business thoroughly. They entice the captives near suitable trees, and all through show almost human intelligence. Here two tame elephants are leading a young wild one to a tree, while a man is about to put a rope round the captive's leg. Tame elephants sometimes use their trunks to protect the hunters.



One after another the legs of a captured elephant are fastened to stout trees. The creature grows furious, but, after wasting his energy in pulling and trumpeting, becomes exhausted, and gives in. Then he is treated to luscious food, and gradually becomes tamer, until at last he can be untied. Here the elephant seen in the upper picture has given up the struggle, and lain down. When a wild elephant will not lift up a leg so that he can be tied, the hunters tickle his foot with a leaf, and he at once raises it and the rope is slipped under it.

Therefore, recognizing that they are secure from injury, they become very bold, and are a real nuisance. Out in the wilds they have great battles, and fight in the natives' gardens, doing grievous damage to the poor people's crops. One wily native decided to punish the ring-leader of a swarm of monkeys which had injured him in this way.

He made a hole in the ground, and in it he placed a nice ripe banana. He concealed round the mouth of the hole the noose of a rope, which he hid in the sand. This rope ran through an iron ring which was attached to the trunk of a tree near by; and the end of the rope the native himself held as he hid and waited. Up came the monkeys, the bold old male leader coming out into the open, while all his wives and children remained for the time being hiding in the bushes. Ambling up he caught sight of the banana lying in the hole and grabbed at it. The native pulled the rope, and the noose closed round the arm of the monkey.

A good pull at the rope drew the monkey up to the tree where the iron ring was fastened. Then the native came out, and, walking round and round the tree, wound the rope round the monkey till he was securely fastened. The man then got a pot of soap and a brush, lathered the monkey, and shaved him. Then he released the monkey, who returned to his companions. They gazed upon him with amazement and disgust, fell on him and beat him, and drove him away. Their band broke up, and the man and his crops were left in peace.

A WILY NATIVE TRAP FOR FIERCE BABOONS

Baboon-trapping is exciting. It is easy to catch the animals, but the danger comes when they have to be handled, for their bite is terrible, and their strength is almost beyond belief. The hunters block up all the drinking-places but one. Near this they construct a trap like a hut, with a spring door. This is left open for some time, and grain is scattered in and about the trap, till the animals look upon it as a sort of refreshment-room. Then one day, when many are inside, a hunter pulls the trigger, the door shuts down, and the baboons are prisoners.

But no man dares go in to secure them. So pronged sticks are thrust through the sides of the trap, and by this means the

baboons are fixed, one by one, without hurt, to the walls of the hut, while their legs are secured. After they are thus tied, they are muzzled, and wrapped from head to foot in canvas, till they look like mummies. Very soon this treatment tames them, and they are placed in cages.

ELEPHANT-CATCHING: ITS EXCITEMENT AND DANGERS

Elephant-catching is exciting and interesting. These great animals are so much used for work in India that it is necessary to make frequent hunts for their capture, because elephants are rarely born in captivity. There are four ways in which these hunts are carried out. There is the hidden pitfall, into which the poor creatures tumble, often injuring themselves badly. Another way is for brave natives to steal up to a wild elephant as the herd is running away, and to cast a noose round its leg. Then the rope is twisted round the trunk of a tree, so securing the runaway. A third plan is to pursue a herd, the hunter riding on an elephant, and casting a noose over any one that he can catch. Thus, however, is not satisfactory, for by this means only the slowest, and therefore not the best, animals are caught, and there is great risk of injury, not only to the fleeing elephant, but to that which is pursuing, as well as to its rider. The best-known way of capturing elephants is to surround a herd and take them all.

When food is scarce, a large herd of elephants will break up into several small groups, the several parties keeping a few miles apart from each other and coming together again when rains have made food plentiful. The hunters go out three months in advance of the time fixed for the actual attempt at capture.

The party of men numbers two or three hundred. Their work is to find out the groups of elephants, and gradually to drive them all together. The men make, as it were, a ring round that part of the country over which the scattered herds are distributed. All work toward one centre and to this the elephants are gradually driven. Generally the wild elephant will seek safety in flight rather than attack a man.

While the hunters are slowly working the elephants up to a certain point, other men are busy preparing a great enclosure. A space of ground is fenced round with

a giant stockade, each piece of timber being the trunk of a strong tree. There is only one way into this—a narrow, funnel-shaped opening, which is closed once the herd has entered. At last, on the day fixed, the whole herd—males, females, and little ones—is driven toward this entrance. So far the task of the hunters has only been to keep the elephants together day and night.

By day they fire their guns to keep them within certain bounds; at night they light large fires to keep them from breaking out of the ring. Now that the animals are at last in the fatal enclosure, the time has come for the *mahouts*, as the elephant-keepers are called, to show their skill. But no matter how skilful they are, they could do very little were it not for the help given by tame elephants, as will be seen in the following account of a capture.

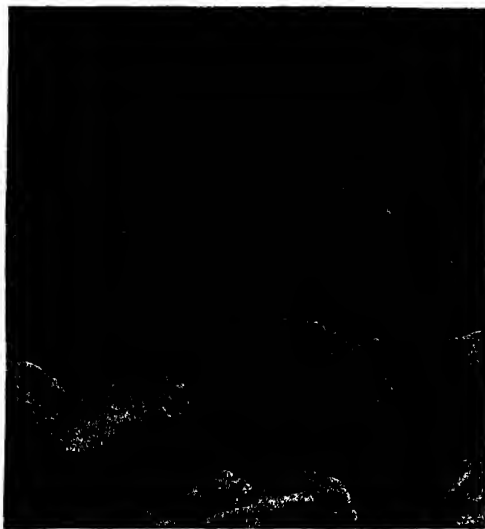
A herd of wild elephants had been driven into a safe enclosure, and two tame elephants, bearing their riders, entered. One had been doing good service in captivity for over a hundred years. The other elephant, named Siribeddi, was about fifty years of age. She entered the enclosure with a noiseless step, carrying two men on her back, and sauntered along with a simple air toward where the trapped elephants were. Every now and then she stopped to pluck a tuft of grass or a few leaves, as though she were engaged in the most ordinary work. The older elephant jogged innocently along behind. As the two tame elephants drew near, the wild ones advanced to meet them, and their leader put his trunk in a friendly way over the head of Siribeddi.

Siribeddi crept after him, and gave the man with the noose a chance to slip down and put it over the other elephant's foot. He saw the danger, and shook off the rope; then he turned to

make a furious attack upon the man, who would have been killed had not Siribeddi driven back the attacking elephant.

The herd again formed a circle, and the two tame elephants pushed their way into the middle of the group, one on each side of the largest male, so that the three stood abreast. The male made no resistance, but showed his uneasiness by shifting from foot to foot. The man with the noose now crept up, and, waiting until the elephant lifted a hind foot, drew the rope tightly round it. The other end of the rope was fastened to Siribeddi's collar. When the noose had been fixed, Siribeddi instantly drew back, dragging the elephant with her. The old elephant followed.

The wild elephant had to be drawn backwards for fully thirty yards, struggling and plunging all the way. But Siribeddi knew her business. She walked round and round a tree, winding the rope round it, all the time holding it tight. With all her strength she could not draw the elephant close up to the tree, so the old elephant now ap-



A HERD OF CAPTURED WILD ELEPHANTS

Photograph copyright by Underwood & Underwood

proached, and facing him, head to head and shoulder to shoulder, forced him backwards. At every step Siribeddi drew in the slackened rope, and finally brought the wild elephant to the very foot of the tree. Then the man tied the second hind leg to the tree, after which the tame elephants placed themselves on each side of him, so the man could creep down and draw a rope round his fore feet, and he was a prisoner.

The largest and strongest female elephant is generally the leader of the herd, and there is often a strong family resemblance between members of the same herd. In India even the elephants are known as "high-caste" or "low-caste" according to their distinctive marks.

CONTINUED ON PAGE 6319.

A GREAT PIONEER



Daniel Boone is here represented on a hunting expedition in his old age. Up to the end of his long life he made long hunting trips, sometimes with only one companion, and it is said that on one of these trips he traveled across the continent, and that he saw the wonders of the region that is now Yellowstone Park.

The Book of MEN & WOMEN



A Pioneer's Log Cabin in the Backwoods.

TWO AMERICAN PIONEERS

THE pioneers of an army are the men who, armed with spades and axes, go before the main body to prepare a camp, dig trenches, or bridge rivers. So we can easily see how the word came to be used as a name for men who strike out on a new path, making a way for others to follow. When we speak of "The Pioneers" in the history of North America, we mean particularly those men who left the older settlements and struck out into the forest, across rivers and mountains, plains and deserts, to make new homes in the wilderness. They were brave, hardy men, filled with great courage. Sometimes they left the older settlements to make room for other members of their families. Sometimes on a hunting expedition, they wandered into a more than usually fertile or beautiful spot, of which they made haste to tell their friends. A few of them, like Cooper's "Pathfinder," grew to love the quiet and loneliness of the woods. The sound of the wind in the trees and the song of the river were more to them than the voices of men, and they fled at the approach of civilization. Some of them were men to whom any kind of settled life was hateful. Others set out in search of

CONTINUED FROM 6177

gold, like the miners of California, or, nearer our own time, of Alaska and the northern part of British Columbia. Where they went others followed, and we owe it to the pioneers that the vast prairies of the West, over which the buffalo roamed, have become a granary for millions, and the busy hum of cities is heard where once the howl of the wolf broke the silence.

THE BEST KNOWN OF AMERICAN PIONEERS

Many of the picturesque band of early pioneers are to us nameless. Others had names which will be handed down through history, and perhaps the best known of all, not so much for what he did, as for what he was, is Daniel Boone.

Throughout Daniel Boone's long life, the frontier was his home, and from his early childhood to his old age his days were full of adventure. It is strange to us now to think of the Schuylkill Valley as being on the frontier, but when he was born there, in 1734, not fifty years before the Declaration of Independence, it was just on the edge of civilization. He was born in a log cabin, and until late in his life he did not know what it was to live in a less primitive dwelling.

It is always interesting to know something about the family of a noted man. We like to ask about his people, where they came from and what they were like, and fortunately in the case of Daniel Boone we can answer all these questions. Some years before the time that our story begins, a Devonshire weaver came to settle in the Quaker colony of Pennsylvania, bringing with him his wife and a large family of boys and girls, whose influence for good in the country has been great and far-reaching. Squire Boone, one of these boys, married Sarah Morgan, a Welsh Quakeress, and Daniel Boone was one of their sons. Both his father and mother were brave and good, and taught their children the self-dependence, self-control, large patience and loyalty for which Daniel was noted.

LIFE ON THE FRONTIER

There were few schools in the country in those days, and none within his reach, and it was not until he was fourteen that he got a chance to learn to read and write. Then his brother's marriage gave the boy a sister-in-law who gladly taught him all she knew,—reading, writing, and a little arithmetic. But though he was able to gain little knowledge from books, he learned many things from nature. He knew well the trees and plants in the forest, and was familiar with the haunts and habits of the wild things that made the woods their home.

About five or six miles away from his clearing, Daniel's father owned some good pasture land, to which the cows were sent to graze each summer. There the boy's mother took him every year from the time that he was ten years old, and there they stayed until the cold weather forced them to go home again. His task was not an easy one. He had to keep the cattle from straying away into the deep forest through the day, and in the evening drive them back to the log enclosure round the cabin, where he helped his mother to fasten them up for the night, safe from wild beasts and thieving Indians.

THE INDIANS IN PENNSYLVANIA

For themselves they had no fear of the Indians, who were always friendly to the Pennsylvanians. From his earliest infancy Daniel was familiar with the silent Red Men, who came perhaps to trade their

furs for the cloth and blankets that his father wove, or stood to watch the sparks that flew from the anvil in his blacksmith's shop. Or perhaps two or three of them would come on a cold winter's night to ask for shelter from the storm, and wrapping themselves in their deer-skins, would lie down to sleep on the cabin floor, with their feet to the log burning on the low hearth. He soon learned to imitate them, as they glided through the forest, and it was in these early days that he gained the knowledge of their ways, which helped him out of many a difficulty in the Indian warfare in which all the settlers were forced to take a part.

In spite of hard work, he had plenty of time for play, and it was during his summer days in the woods that he laid the foundation for his fame as a hunter. At first, his only weapon was a sapling torn up by the roots and trimmed down until it was just such a weapon as the staff which David used to kill the lion and the bear. His father was very proud of his skill in bringing down game by flinging this light club, and when he was twelve years old gave him a rifle of his own. With this he soon became an unerring marksman, and henceforth kept the family larder well supplied with food, for the forests around his home swarmed with game.

THE BOONE FAMILY MOVES TO NORTH CAROLINA

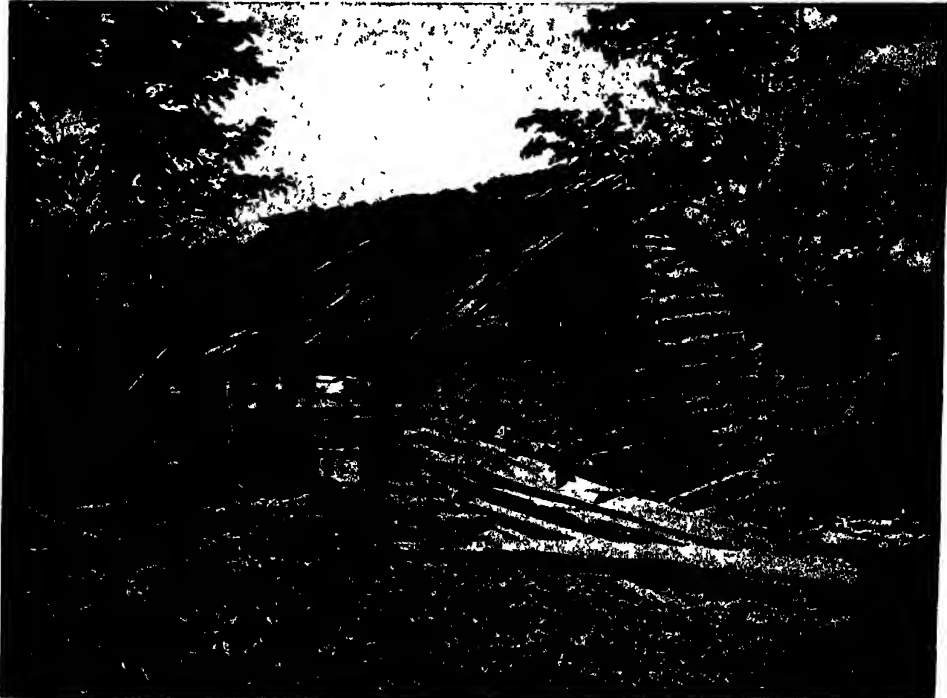
When he was about sixteen, the family left Pennsylvania, and traveled down through the Shenandoah Valley into North Carolina. It was a long journey for a large family to take with their horses, cattle, implements and household goods, but they traveled slowly, and Daniel had plenty of time to go on long hunts and explore the country through which they passed. They took two years on the way, but at length they reached their destination, and settled down at Blue Lick in the Yadkin Valley.

These "Licks," of which we read so much, were very interesting places. In many parts of our country, and especially in Kentucky, there are a number of salt springs, and from time immemorial these springs were haunted by wild animals, who came to lick the salt left by the water as it flowed away. They kept the ground around the spring licked bare, and so the place was called a "lick."

EARLY DAYS IN KENTUCKY



This rather crude picture is taken from an old drawing, representing Daniel Boone and his friends rescuing his daughter and two companions from a party of Indians who had captured them. The three girls were on the Kentucky River, near the Fort at Boonesborough, when their canoe was carried to the other side by the current, and the Indians, who were hiding in the bushes, caught them and carried them off.



This picture shows the ruins of Daniel Boone's cabin at Femme Osage, in what is now the state of Missouri. When Boone left the western part of Virginia, in 1799, to find a place where he would have "elbow room," as he called it, he crossed over into Louisiana, which had been transferred by France to Spain, at the end of the French and Indian War. It became part of the United States by the Louisiana Purchase.

YOUNG BOONE GOES TO FIGHT AGAINST THE INDIANS

For the next three years Daniel lived at home, helping his father and brothers in the blacksmith shop in the winter, and in the summer going off on long hunting trips. But when he was twenty-one, war broke out with the French and Indians, and his hunting ended until it was over. The war, which is called the French and Indian, or the Seven Years' War, had been brewing for some time. A struggle was going on between the French and British for possession of the country west of the mountains. The warlike northern tribes of Indians were friendly to the French, and encouraged by them began to make raids on the Indians who were friendly to the British. Soon they became bolder, and began to attack the settlements which had been made in the valleys between the mountain chains. Then the French built forts in territory which was claimed by Virginia, and under their leadership the hostile Indians became very daring.

In 1756 General Braddock with a small army was sent from England to drive back the intruding Frenchmen, and teach their Indian allies a lesson. The expedition ended badly. General Braddock knew nothing about Indian warfare, but would not listen to the advice of the frontiersmen who were with him, because he thought they knew nothing about the profession of arms. In consequence, he fell into an ambush, and although he and his men fought bravely, they were defeated, and he himself was killed. Daniel Boone was with the army, and was in the thick of the fight.

BOONE BEGINS TO EXPLORE THE WILDERNESS

He was married shortly after this to Rebecca Bryan, the daughter of one of their nearest neighbors, and settled down to a life of hunting, trapping, blacksmithing and farming. But though he lived for many years in the little log house that he built, his days were not peaceful. Once the Indian wars had begun, they did not cease until after Canada was taken from the French in 1763, and at one time there was so much danger that Daniel thought it best to take his wife and little ones out to Virginia for a while.

But he soon came back, and took his full share in the fighting. We know that

he was present at some of the battles, and once he went away down into Tennessee,—it is thought on a scouting expedition. Up to a few years ago, a tree stood on the banks of Boone Creek, in Tennessee, on which was cut an inscription reading:

D. Boone
called a BAR
on this tree
year
1760.

After peace came he devoted more and more of his time to hunting, and in fact made it his principal occupation. Very soon he began to think of changing his abode, for there were now a great many families living in the valley, and it is said that he liked his nearest neighbors to be so far away that he could not see their chimney smoke as it curled in the breeze.

In 1765, he set out on horseback, with seven other men, to find his way to Florida, which was then a new colony. They had a terrible journey down through the swamps, and once nearly died of hunger, for the hunting was very poor, and food hard to get. However, he reached Pensacola, and might have gone to live there, if his wife, when he told her of the trip, had not decided against it. She knew that he would be unhappy unless he had plenty of his beloved hunting.

THE "DARK AND BLOODY GROUND" CALLED KENTUCKY

Then he turned his thoughts westward to the land beyond the mountains,—Kentucky, the "dark and bloody ground" of the Indians, of which he had heard many wonderful tales.

He made an attempt to find it in 1767, and, with one companion, actually spent the winter there without knowing that he had reached it, but it was not until 1769 that he set out on the expedition that made him one of the founders of the state. It was his report, based on observations made on this second trip, which induced Colonel Henderson to organize the famous Transylvania Company.

This time, he and his companions penetrated into the country. They climbed up over the Blue Ridge Mountains, the Stone and Iron Mountains, through Moccasin Gap of Clinch Mountain, through Powell's Valley, up a hunter's trail through Cumberland Gap until they

struck the "Warrior's Path," beaten by the feet of generations of Indian war parties, and so down into the forests of Kentucky.

ALONE IN THE WOODS

Daniel did not leave Kentucky, the land of his dreams, for two years, and twice was left alone for months, without even a dog as companion. But during these lonely months he was not idle. He wandered all over the country, exploring it in every direction, noting its beauties, its well-watered plains and valleys, and storing up in his active mind knowledge that was of great value to the settlers who followed him into this fertile region. His brother Squire, who had been his companion during the year, came back in December, and they spent another winter in the woods. But this time they fell in with another party of hunters who met them in a curious way. One evening when these men were making camp, they heard what, in that place, was a most extraordinary noise. Motioning his companions to be silent, the leader crept cautiously forward and presently came on Daniel Boone, lying flat on his back and happily singing at the top of his voice as he waited for his brother.

Boone was delighted with the Kentucky country, and in 1773 persuaded a number of families to join in attempting to make a settlement there. But one night, when they were on the way, his eldest son and some companions were surprised and killed by Indians, and overcome with sorrow and fright, the little party decided not to go on. Boone and his family stayed for a time in Western Virginia, and the others went back to their old homes.

BOONE IN "LORD DUNMORE'S WAR"

A new war now broke out with the Indians, who had been greatly angered by the treatment they had received from the white men. Boone did good service in this war, which is known in history as "Lord Dunmore's War," and received great praise for his work. During this war he was sent to warn some scattered parties of their danger, and traveled eight hundred miles in sixty days through woods which were alive with Indians.

The Indians were soon subdued, and when peace came the settlement of Kentucky was seriously begun. The new ef-

fort was made, on a much larger scale than before, by the Transylvania Company, with Colonel Richard Henderson at its head, and Daniel Boone for one of the leaders. Early in 1775 the first party of settlers reached Big Lick on the Kentucky, by the path which has since been marked out by the Daughters of the Revolution. They at once began to build a fort, and Boone turned surveyor, laid out the site of a town, to be called Boonesborough, and planned the fort. Outside this fort there was a great elm tree, and under its shade the first assembly ever held in Kentucky met to make laws to govern the little community.

THE GROWTH OF KENTUCKY HINDERED BY WAR

In spite of various drawbacks, the little colony grew steadily. Boone and a number of the other settlers brought their wives and families, and prosperity seemed in sight. But the War of the Revolution broke out and the Indians who were allied to the British commenced to raid the weak settlements. The first warning that the Boonesborough settlers had of their peril was the kidnaping of Boone's daughter Jemima and her two friends, Betsey and Fanny Calloway. The three girls were paddling on the Kentucky one Sunday afternoon when their canoe was carried by the current to the opposite bank, and they were captured by five Indians who had been watching the fort from the bushes. Colonel Calloway, the father of Betsey and Fanny, followed in hot pursuit with a party of mounted men. Boone, leading a party on foot, followed the trail and, guided by the scraps of clothing and bruised twigs which the brave girls contrived to leave in the path, caught up with them and rescued them.

BOONE TAKEN CAPTIVE BY INDIANS

The war times were gloomy days for Kentucky. Provisions were scarce, and game was hard to get, for there was always danger of surprise from the Indians. Boone's fort was often attacked, and once he was wounded and barely escaped with his life. Another time, when he had gone into camp at Blue Lick to make salt, he was captured by a war party of Indians who were on their way to attack Boonesborough. He knew that the fort was not ready for defence, and in desperation promised the Indians that if they would put off the attack until spring,

he would persuade his companions to surrender to them. The Indians made the promise, thinking that he would lead them in the spring, when they could comfortably and safely carry off the whole community. The other members of his party listened to his persuasions, and these brave men, to save their families and friends, voluntarily went into what they knew would be a hard and bitter captivity. All through the winter they were dragged about the country from place to place, going even as far as Detroit.

In the spring, when the Indians were gathering for the attack on the settlements, Boone managed to escape and, without food, traveled steadily on towards the fort. He reached it in four days, walking forty miles a day, having eaten only one meal during the whole journey.

THE FAMOUS SIEGE OF BOONESBOROUGH

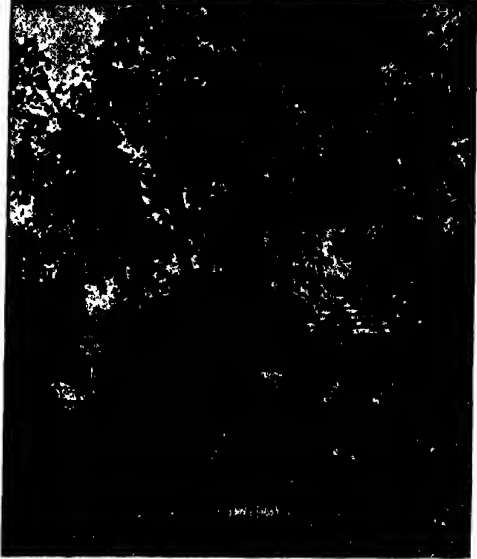
The fort was quite unprepared for an attack, but he set the people vigorously to work, and soon had everything in readiness. However, the Indians did not reach the fort until September, when they appeared in large force, and the siege of Boonesborough, which lasted for ten days, is famous in the annals of Kentucky. At times the settlers almost despaired; but at last, to their joy, the noise of shouting and fighting suddenly quieted down, and the Indians silently disappeared in the forest.

For years the settlers in Kentucky endured hardships and suffered many things from the Indians, who continued to harass the settlements even after the War of Independence came to an end, and they were no longer supported by the British. In spite of sorrow and hardships, however, the country continued to fill up, and Boone was in great demand as a surveyor. His knowledge of the Indians and his calm bravery and patience made him a tower of strength. He was made lieutenant of his county, town trustee, and was sent as representative to the legislature at Richmond.

BOONE LOSES HIS LAND THROUGH CARELESSNESS

He does not appear to have been a good business man, and in spite of the fact that he was a surveyor and must have known the regulations, he failed to file his own land claims. As a consequence, new set-

tlers registered claims against the property which he had marked for his own, and then brought suit against him to obtain possession of them. As he had failed to comply with the law, the courts could



After Daniel Boone moved over into that part of Louisiana, which is now the state of Missouri, the Spanish governor made him syndic, or magistrate. While he held office, he held his court under this tree, which is now called the "Judgment Tree."

do nothing for him, and he found himself without an acre of ground in his beloved Kentucky. Sadly disappointed, he left it and went back to Western Virginia, where he lived at the little village of Point Pleasant in the Kanawha Valley for a number of years. He was held in great esteem by the people of Virginia, who again sent him to the Assembly at Richmond, though he cannot be said to have been a brilliant success as a legislator.

After the final defeat of the Indians by General Anthony Wayne, more people began to arrive in Kanawha Valley, and again Boone felt that he must move so that he might have "elbow room" as he expressed it. Some members of his family had gone down in 1799 to Missouri—then under Spanish rule—and there he followed them in the following spring with his wife and family and all his possessions. They went by water, and we can imagine the picturesque little procession as it followed the shores of Kentucky down the broad Ohio.

He was very happy for a few years in Missouri. He received a large tract of

land from the government, had plenty of room, good hunting, and was made magistrate of his district, an office in which he was very popular.

BOONE AGAIN HAS TROUBLE ABOUT LAND TITLES

But after what is known as the Louisiana Purchase, Missouri came under the government of the United States, and again we have a repetition of the old

his life was tenderly cared for by his sons, to whom he had sold his land, so that he might pay some debts which he owed in Kentucky. He lived until 1820, always happy and active, going off sometimes on a hunting trip, sometimes working a little on the farm.

At the time of his death, there was in session, in St. Louis, a convention to draft a constitution for the state of Missouri,



A PIONEER HOME

This is the kind of home which the pioneers built on the edge of the wilderness. The men have felled trees, in clearing the ground for cultivation, and are dragging them into a heap to burn them. During his adventurous life, Boone must have assisted many times at such a scene as this.

story. Where the pioneers had gone, others followed, the land was broken up for cultivation, the Indians moved away, and the wild animals were killed off, or fled before civilization.

Under the new laws, Boone lost his office, and for some time had a good deal of trouble about his lands, because he had again neglected to see that his title was registered. However, this difficulty was settled happily by the government making a special grant to him of a thousand acres. He did not move again, for he was now an old man, but contented himself with making long hunting trips, and once, it is said, went as far as the region of Yellowstone Park.

In 1813, he was greatly saddened by the loss of his wife, and after her death left the little house in which they had lived for years, and for the remainder of

which had applied for admission to the Union. Upon hearing the news of his death, the delegates to the convention adjourned for the day as a token of the respect in which he was held, and each member wore a band of crape on his left arm as a sign of mourning.

KENTUCKY ERECTS A MONUMENT TO BOONE

Some years after his death, the people of Kentucky felt that some honor should be shown to Boone, and a monument was built to his memory at Frankfort, the capital city. He was not the first man to explore the region, nor even the first to settle in it, but they realized that he was the best type of pioneer, and that in honoring him they honored what was greatest in the men who had taken their lives in their hands and gone out into the wilderness to build a nation.

JAMES ROBERTSON OF TENNESSEE

WHILE Daniel Boone was helping to build the state of Kentucky, the same work was being done in Tennessee by James Robertson. Robertson, who was a few years younger than Boone, was born in Virginia. We know little of his early years, except that while he was only a child, his family moved to North Carolina. Of course, he learned to hunt and shoot, and knew all the trees and plants, and the birds and animals of the woods, how they lived, and where they made their homes. Every boy of pioneer days learned these things, or was counted of not much use to his community. But he never went to school, for it is probable that he was out of reach of one, and his father was poor. When he was about twenty-six, Robertson married, and his young wife took time, from all the other tasks that fell to the lot of a pioneer's wife, to teach him how to read and write.

When he had been married about two years, Robertson decided to go in search of a place where he could make a new settlement. With nothing but his horse and his rifle for company, he crossed the mountains and found himself in the lovely Watauga Valley, where there were already a few settlers as adventurous as himself. He stayed long enough to prove the fertility of the land by growing a field of corn, and then recrossed the mountains to bring his family back to build the new home that he planned.

On the long journey back through the mountains he lost his way and his horse, and if he had not been rescued by hunters, he would have lost his life; but he reached home safely, and so full of enthusiasm that sixteen other families determined to join him when he set out in the spring.

A LONG JOURNEY TO A NEW HOME

Many of us know the discomforts of moving even from one comfortable house to another, though with the aid of skilled packers, who take every care of our treasured belongings. But can you imagine the moving of those seventeen families who set out to make the Watauga settlement? Early in the spring, everything that could be carried on the backs of horses was packed, the things that could not be taken were sold or given to neighbors, the door of the old home was closed, and each family set out for the meeting

place. There the sadness felt at leaving the old home was forgotten in the feeling of adventure. With the leader at the head of the column, the women and children on horseback, the men trudging at the horses' heads and keeping vigilant watch, and the boys ranging the forest on either side, or driving the cattle that they brought with them, the little party went forward with high hopes. At night they camped, and you can imagine the delicious feeling of safe fear with which a little boy went to sleep under the starlight, in his father's strong arms, or a little girl nestled close beside her mother, near the fire, sure that any prowling Indians or bears or wolves would fall before the unerring aim of the men on watch.

They arrived safely at the Watauga and the men soon built the log cabins that were to be their homes, and gradually made the simple furniture that had to fill their needs in the early years of the settlement. Trees were cut down to clear the fields, and the land was tilled. The next year John Sevier, also a native of Virginia, joined the settlement, and he and Robertson became the leaders of the little community.

THE LITTLE SETTLEMENT FORMS A GOVERNMENT

The Watauga Valley, in which the new settlement was made, was far from the older settlements and the towns where the courts of law were held. So the men met in convention and decided to form a government of their own. They drew up a written constitution known as the "Articles of the Watauga Association" and elected a little assembly of thirteen representatives to govern them. From among the representatives five were chosen, and these men formed a court to try all cases of wrong-doing.

That same year Robertson and another man made a treaty with the Cherokee Indians who lived near by. To celebrate the treaty, sports were held, to which the Indians were invited, and a feast was made. But some bad men who were prowling around in the woods killed an Indian, and the whole party left the settlement vowing vengeance upon it. Not a moment was to be lost. Leaving Sevier and the other men to build a strong fort as a place of refuge, Robertson set out alone to make peace with the Indians.

Although he knew that they might torture him to death, he followed them through the forest, and when he came up with them apologized for the action of the wrong-doer and won them over completely by his fearlessness and courtesy.

ANOTHER MOVE THROUGH THE LONELY WILDERNESS

Robertson prospered in Watauga, but about eight years after he settled there, he determined to go further afield. This time he made up his mind that before the moving began there should be some houses for the people to move into. So, in the spring, he and eight other men climbed the Cumberland Mountains and went down the other side into the land that lies between the Cumberland and the Tennessee. They traveled as far as French Lick, which they decided was a good place for a settlement, and there they planted a large field of corn and built log cabins. When the work was done, three men stayed to guard the crop and the houses, and the others went back to Watauga to show the way to the men and women who were to make the new settlement.

Most of the younger men of Robertson's party followed him through the mountains to the Cumberland Valley. It was a toilsome road, however. It was thought that the river would be an easier way for the women and children to take, and with a few men, they went round by boat. Look at your map, and you can easily follow the adventurous voyage taken in the winter of 1780 by so many boys and girls, some of them perhaps the ancestors of some of our readers. The party, we are told, left Cloud Creek, on February 27, 1780, under command of John Donelson, a friend of Robertson. They floated down the Tennessee until they reached the Ohio, rowed and paddled up the Ohio to the Cumberland, and up the Cumberland to Big Salt Lick, where Robertson met them. Two months had been spent on the way and much of the time they had been in peril from Indians, and toward the end, they were sometimes hungry.

No sooner were the people settled down in fixed habitations than Robertson and Colonel Richard Henderson, who had been associated with Boone, helped to organize a government. Representatives were chosen by each of the little villages in the settlement, and the representatives

met in Nashborough, the central fort, which was built where Nashville now stands. Robertson was made chairman of the court, and colonel of the militia, and seems to have been looked upon as the natural leader of the whole community. He was one of those men who seem born to lead others, not because of birth or education, but because of bravery, good judgment, and high character.

HARD DAYS OF INDIAN WARFARE ON THE FRONTIER

Before long the Indians attacked the new settlement and the settlers were kept constantly on the alert. Some families deserted their clearings and went back to their old homes. Others wanted to go but Robertson persuaded them that to face the dangers was the braver part, and heartened by his strength, they stayed and were able to fight off their attackers. As winter came on the powder and bullets began to run short, and the dauntless Robertson went alone through the woods to Kentucky, where he got a supply, and brought it back just in time to beat off two attacks made by the Indians.

Robertson suffered much hardship during the years of Indian warfare which came after the Revolution. One of his sons was killed, and he, himself, was wounded and almost captured. But the great-hearted man was a tower of strength to the people of the Cumberland region. We find him promising that a road should be built and seeing that it should be done, organizing armed forces and leading an expedition against the Indians, and persuading new settlers to come into the district, for he knew that the only way to quiet the Indians was to overawe them by filling the country with white people. Many strong men and women did come in. By degrees the country filled up with comfortable farms, and except on the border, the warfare died out.

All this time the country which is now Tennessee had been part of North Carolina. In 1791, however, North Carolina ceded it to the nation, and it was made the Territory of Tennessee. Robertson was put in command of the militia in the western part of the territory, and a few years after the State of Tennessee was admitted to the Union he was made a state senator. He died in 1814 at the age of sixty-eight, and his memory is honored to the present day.

THE NEXT STORY OF MEN AND WOMEN IS ON PAGE 6349.

THE MIGHTY HEIGHTS ABOVE THE TRAIN



AN IMAGINARY VIEW OF THE TRAIN RUNNING THROUGH TUNNEL UNDER THE ALPS

More than a mile below the tops of the mighty mountains rushes the brilliantly lighted train, with its load of perhaps five hundred passengers. The artist here shows us an imaginary section under the Alps, with children above, all unconscious of the fact that, could they but see through the solid rock, the train would appear below, like a fiery serpent boring its way through the black mass beneath them.



The greatest mass of mountains in Europe, through parts of which the Simplon Tunnel runs.

BORING THROUGH THE ALPS

THE MOST WONDERFUL WAY EVER MADE

THE story of the boring of the famous tunnels through the Alps is like a fairy tale. There are three of these tunnels—the St. Gothard, the Mont Cenis, and the Simplon—and through them, every day, hundreds of travelers pass out of Switzerland into Italy, beneath the Alps, in the very heart of the greatest mountains in Europe, with millions of tons of earth stretching for more than a mile between them and the sky.

Let us take one of these tunnels only—the Simplon. The work occupied 10,000 men nearly eight years, and cost over fifteen million dollars. When Hannibal crossed the Alps with his army, it took him fifteen days, and cost an enormous number of lives. Napoleon took five days to cross when he set out to conquer Italy. He did not forget the difficulties of the crossing, and when he became emperor he built the Simplon Road running along the Simplon Pass, over a shoulder of the mountain, and rising to a height of 6,600 feet. It is 42 miles long; it is carried over 611 bridges, through many galleries and short tunnels cut in the rock, or built of solid masonry to protect the traveler from the swift rush of avalanches in winter. Until

CONTINUED FROM 6214

the opening of the Simplon Tunnel, that was the only way over the Alps at this point.

The Alps are pierced by two other famous tunnels—the Mont Cenis and the St. Gothard—but they are far away from the Simplon.

There are two features in which the Simplon Tunnel differs from all others. Being $12\frac{1}{2}$ miles in length, it is longer than any other railway tunnel in the world. A more remarkable point is the immense distance beneath the surface at which it runs. When we reach the highest point to which the tunnel climbs in the heart of the mountain, we have still more than a mile of solid rock above us. It could have been made much nearer the top of the mountain, but that would have meant a very high climb for the trains before reaching the tunnel. On the north, or Swiss, side the entrance is 2,249 feet above sea-level, while on the Italian side it is 2,079 feet. The tunnel slowly rises till it reaches a height of 2,310 feet. Above that lies a mass of mountain more than a mile high. At one point it is 7,005 feet below the surface. The tunnel slopes slightly towards each end, so that any water which enters may run down the slopes and escape. The tunnel is

double: that is, there are two parallel tunnels 56 feet apart, each carrying one line of railway. This plan greatly helped ventilation, and ensured the health of the men.

The engineers expected to find great heat—for the deeper we go in the earth the higher the temperature rises. They expected to find a heat of about 100 degrees, but when they came to the worst part they met a heat of 132 degrees, while hot water flowed in. There were rivers and lakes hidden in the mountains of which they had previously known nothing. There were soft parts, too, in the mountains, which they had not expected to find.

The two ends of the tunnel—Brigue on the Swiss side, and Iselle on the Italian—became cities of industry. The Rhone at the Swiss end and the Diveria at the Italian were harnessed and made to supply power for driving the many kinds of machinery which were used. A new colony sprang into existence at each end of the tunnel, in which were comfortable homes for the workmen and their families, cafés, hospitals, places of amusement.

Everywhere these little towns were lighted by electricity, made by the running of the harnessed rivers. The comfort of the workmen was looked after. They had special clothes to work in, warm and cold shower-baths, and cooling chambers were furnished, to prevent their feeling the cold on coming out from the hot depths of the mountain into the chill atmosphere of the Alps. Machinery forced in enormous quantities of cold, pure air, and drew out the foul air. Few horses were allowed in the tunnel, because they made the air impure; and special watering machinery instantly converted the dust into mud, so that the men should not breathe it. The conditions were excellent, and the men worked with extraordinary goodwill. When the St. Gothard tunnel was built the death-rate among the working force was 800 in eight years. During the seven years' work on the Simplon, only 60 deaths occurred.

Work was begun at both ends of the tunnel at once—with 6,000 men on the Italian side, where the harder work was expected, and 4,000 men on the Swiss side. Drills driven by hydraulic power were used to bore holes in the rock, and in the holes thus made charges of dynamite were placed and fired.

Water under heavy pressure smashed up the rock which the dynamite dislodged, and long trains carried away the rubbish and brought in building material, so that solid masonry could be built to form walls, and give extra support. Day and night men were at work, working in shifts of eight hours each. All the machinery for the work had to be specially made, and with this the men bored away 18 feet a day. The men on the Italian side worked toward the Swiss side, and those on the Swiss side toward the Italian.

For a time all went well. Soon, however, those on the Italian side met with unlooked-for difficulties. They broke into soft and treacherous ground, where they had expected to meet solid rock. To make this secure, they erected enormous timbers, but these were crushed. Next, heavy steel girders were tried, but so great was the pressure above and all round that these became twisted like wires. Not until quick-drying concrete was built round them could the girders be made to hold up.

Then the workmen came upon an underground river of intensely cold water. It rushed into the galleries at the rate of 10,564 gallons a minute. That gives nearly 100,000 tons of water in the course of the day and night, enough to supply all the wants of a large city. The coldness of the water reduced the temperature to 55 degrees, the lowest point recorded.

The men worked in waterproofs and rubber boots and leggings, but they were in a shower-bath the whole time, and up to their knees in water, and often in danger of drowning. Drainage systems had to be constructed to carry away this river, and, after a delay of six months, the danger-spot was safely passed.

Very soon afterwards, however, the rocks into which they were boring began to get hotter, and streams of hot water gushed out. Having passed a river of cold water, they had now come upon another, which filtered down through the scorching rocks. It flowed into the galleries at the rate of nearly 100,000 gallons an hour—a river of scalding water. Nobody on the spot dreamed of giving up the work, though everybody outside thought that the task must be abandoned. The men on the Swiss side

BORING THROUGH THE ALPS

also had come upon baking rocks and hot water. The same idea was adopted for both sides of the tunnel. On the Swiss side powerful machinery pumped in cold water from beyond the end of the tunnel upon the burning rocks and upon the cracks from which the scalding water issued, and so cooled both rock and water. Cold water was also sprayed in the air.

The plan on the Swiss side worked well, until a great storm at that end of the tunnel caused a landslide, which cut off the water supply. The hot water was still pouring in, so the engineers had to put up enormously strong iron doors, right across the tunnel. This, to a great extent, shut out the flow of hot water, and enabled the men to go on building up the walls in the rest of the tunnel. And there they had to leave their boring, and wait for the men on the Italian side to work their way through.

The brave fellows on the Italian side worked doggedly on. They now turned one river against another. The cold river through which they had fought their way was made to serve the pumps, and to help to cool the scorching rocks and water where their present work lay.

Little by little they worked their way onwards to the spot where they expected to break through. They knew exactly the spot at which they *should* break through, and make the tunnel complete. They had been for years working



in what they hoped was a straight line. Had they gone straight, or had they gone astray, and might they have to go on boring, and find that they had missed the line that they should have followed?

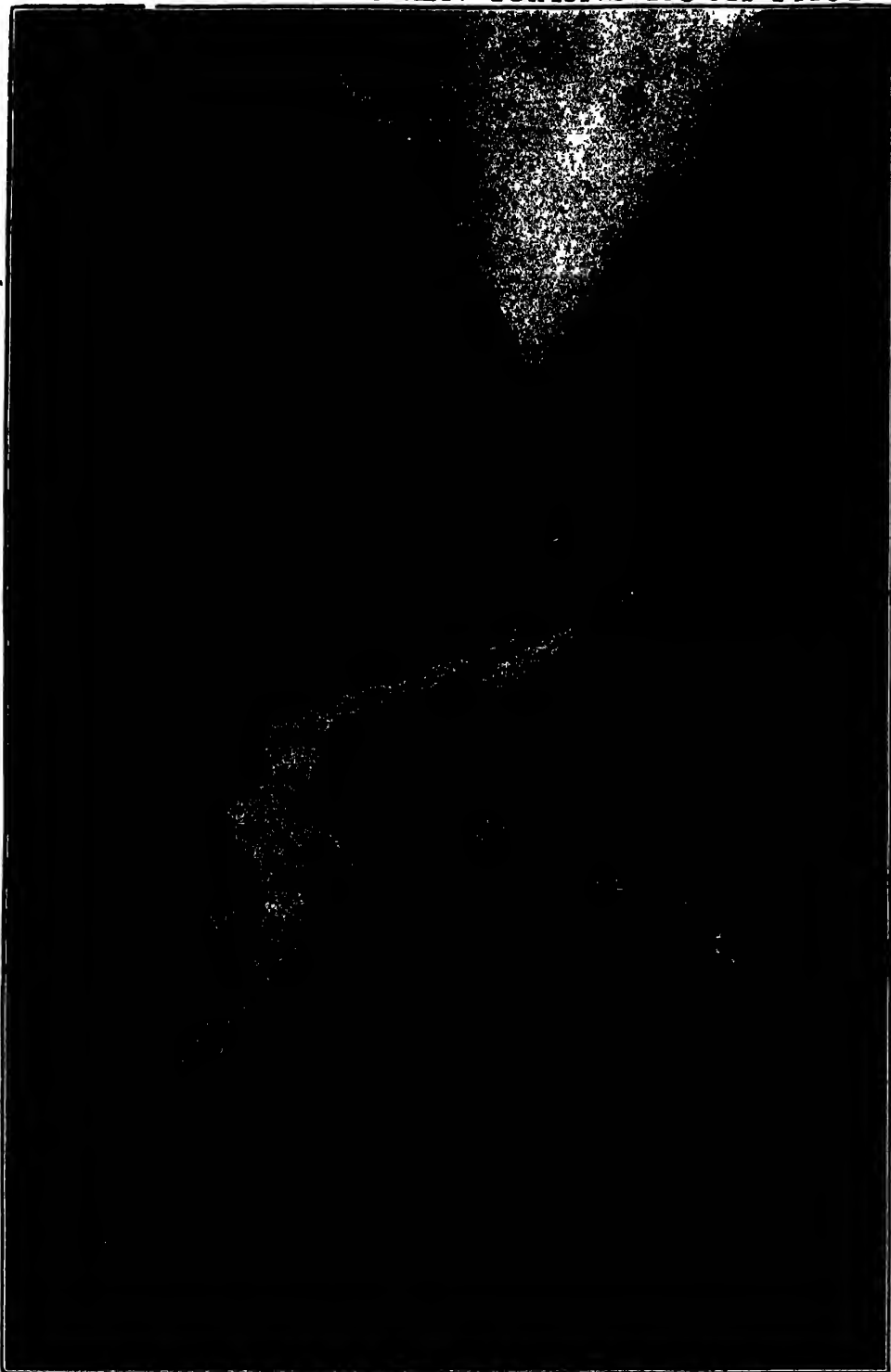
At last the men on the Swiss side heard the sound of the drills, and knew that the others were approaching them. Twenty feet, nineteen feet, then only sixteen feet remained, and so the last barrier was gradually bitten away by the drills. Then came the last charge of dynamite which was to open the way. It was put in and fired, and a hole in the rock eight feet wide opened. The tunnel was complete! After twelve miles of boring, starting from different countries, the workmen met in the heart of the Alps.

In May, 1906, the King of Italy and the President of Switzerland met in the tunnel, and a month later, nearly eight years from the beginning of the work, trains were running through the Simplon, the longest and deepest of all the tunnels in the world. The trains are drawn through by electric locomotives.

The route became so popular that a new or second Simplon tunnel was necessary. By 1915 the length of completed tunnel at the north and south ends was half done. The work was then seriously interfered with by the drafting of workmen for the Italian army, as so many great undertakings have been stopped by the greatest war in history.

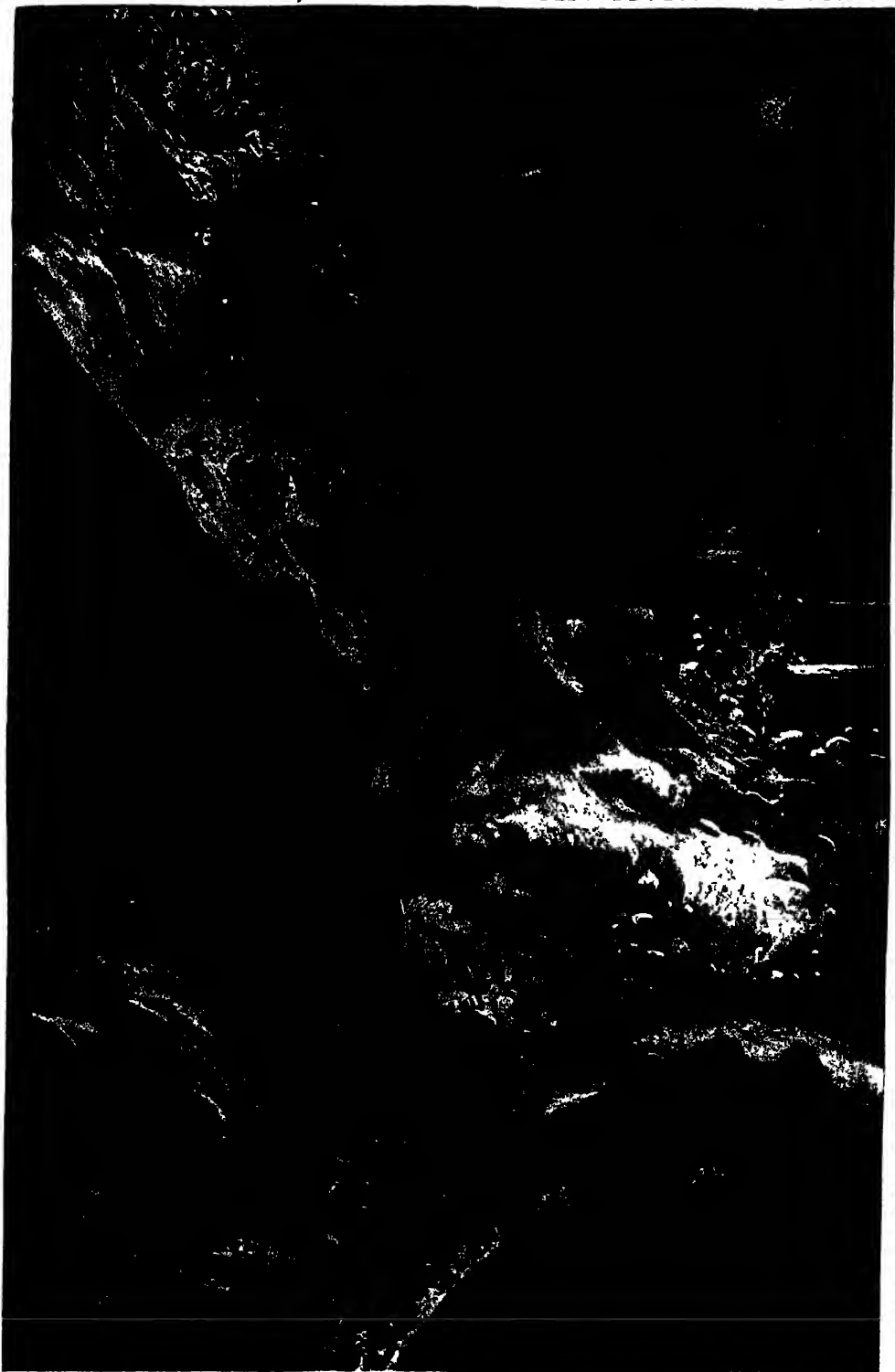
These 19 high buildings could stand like this between the mountain-top and the trains.

WHERE THE UNSEEN TRAINS RUSH PAST



For thousands of years the famous Simplon Pass, shown in this picture, was the principal route across the Alps, but since 1906, when the Simplon Tunnel that had been bored through the solid mass of the mountains was opened, the pass has been very little used. The splendid road was built by Napoleon. Now, instead of plodding or driving across this road, travelers dash through the mountains unseen by the mountaineers.

THE CRASH, CRASH OF AN AVALANCHE



This picture gives some idea of the scene of terror when an avalanche crashes down the mountain-side. A very small cause will set the mass of overloaded snow in motion. The Simplon tunnel was built not only in order to shorten the route but also to avoid the possibility of a railway being blocked by an avalanche.

BLOWING UP A MOUNTAIN FROM INSIDE

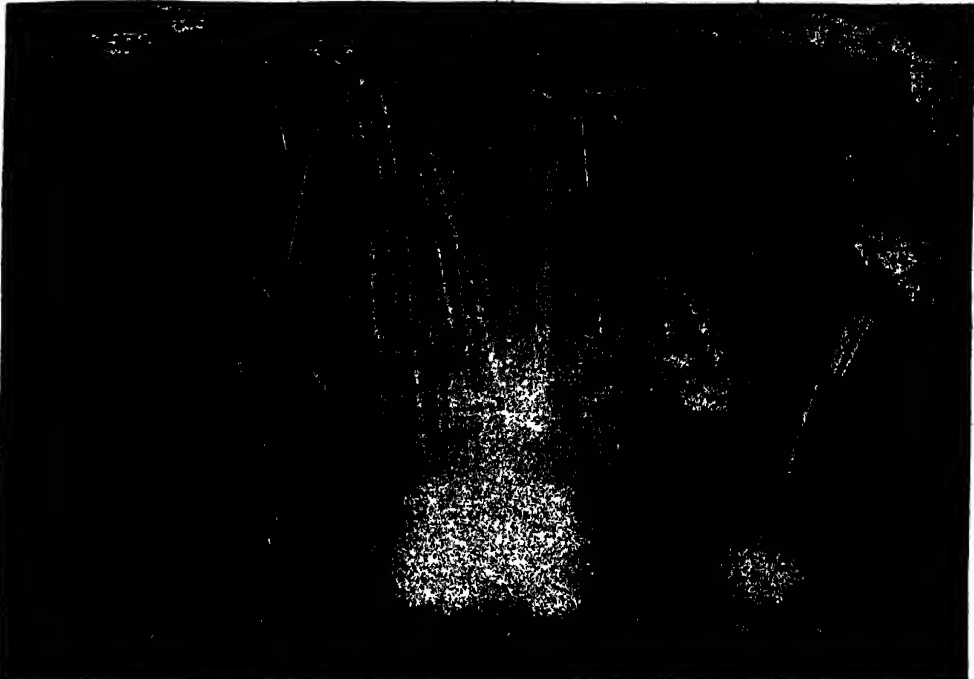


The great tunnel was made by blowing a passage through the mountains with explosives. After drills had bored holes in the face of the rock, cartridges were inserted and a man set light to them, as shown.



In firing cartridges, a time-fuse was used—a match that would burn for a time before exploding a cartridge—in order that the workman could get to a place of safety. Here we see the tunnel after an explosion.

HIDDEN RIVERS OF HOT AND COLD WATER



After blowing away the rock, the men were often in danger of being drowned by rushing water from springs that had been let loose. Sometimes the water was very hot, like that shown in this picture.



Many times the springs rushed in like a torrent, and here we see a cold spring that was tapped, pouring 25,000 gallons of water a minute into the workings. This caused a delay of six months in the work.

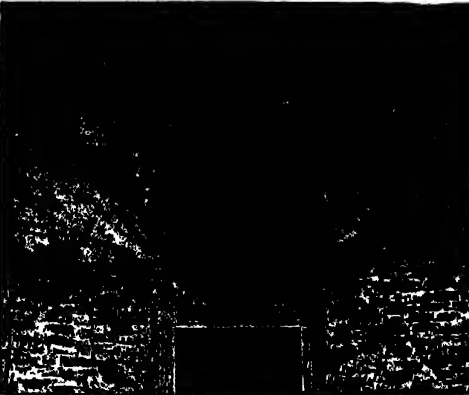
THE LITTLE PIPES THAT PIERCED THE ALPS



It is really to these wonderful machines that we owe the tunnel. By means of a stream of water driven at tremendous pressure, a little pipe with a jagged end is turned round and round, eating away the rock.



For a great part of its length, two passages were excavated, as shown here, and then the dividing wall was removed. This plan made easier the ventilation of the tunnel and the removal of intruding water.



As the passage was made through the mountain, the rocky roof was held up by huge timbers, as shown on the left. Then steel frames with more timber were erected, as on right, and stone walls were built in.

WATER PUMPED OUT AND AIR PUMPED IN



Tunneling was made possible by the work of huge pumps like the one shown here. Vast volumes of water that poured in had to be pumped out, and a constant supply of fresh air had to be pumped in.



Here water that has burst into the tunnel is being driven into the mouth by a great pump. Flooding was one of the greatest troubles during the work.

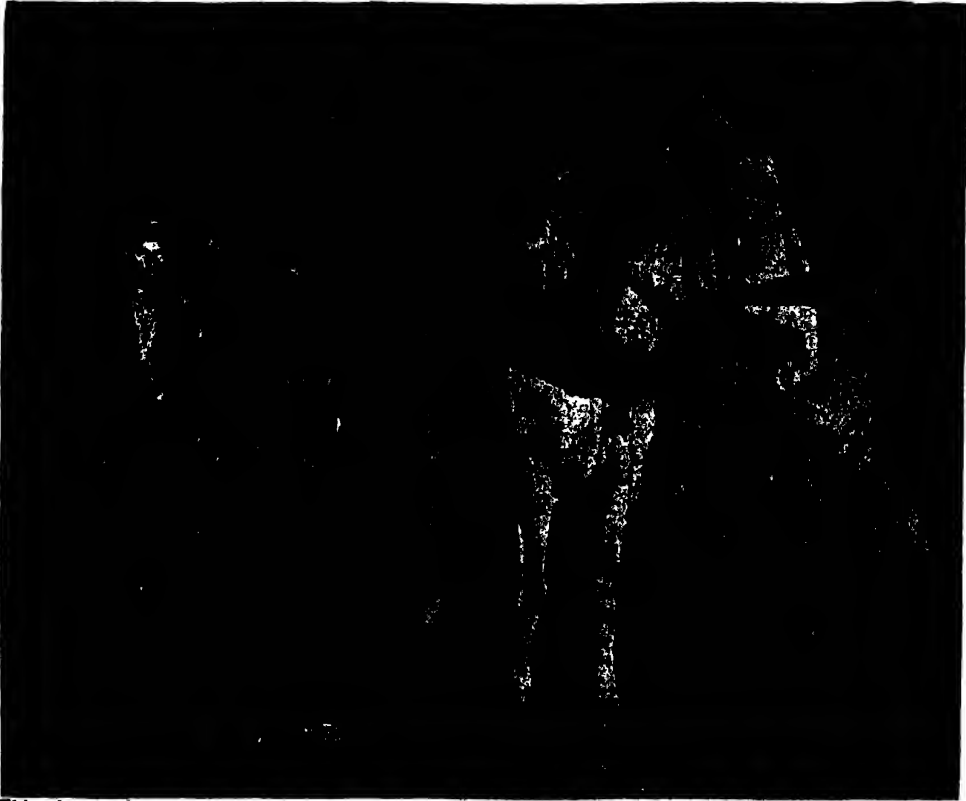


Not only was air driven in for breathing purposes, but the locomotives used by the workmen in making the tunnel were driven by compressed air.

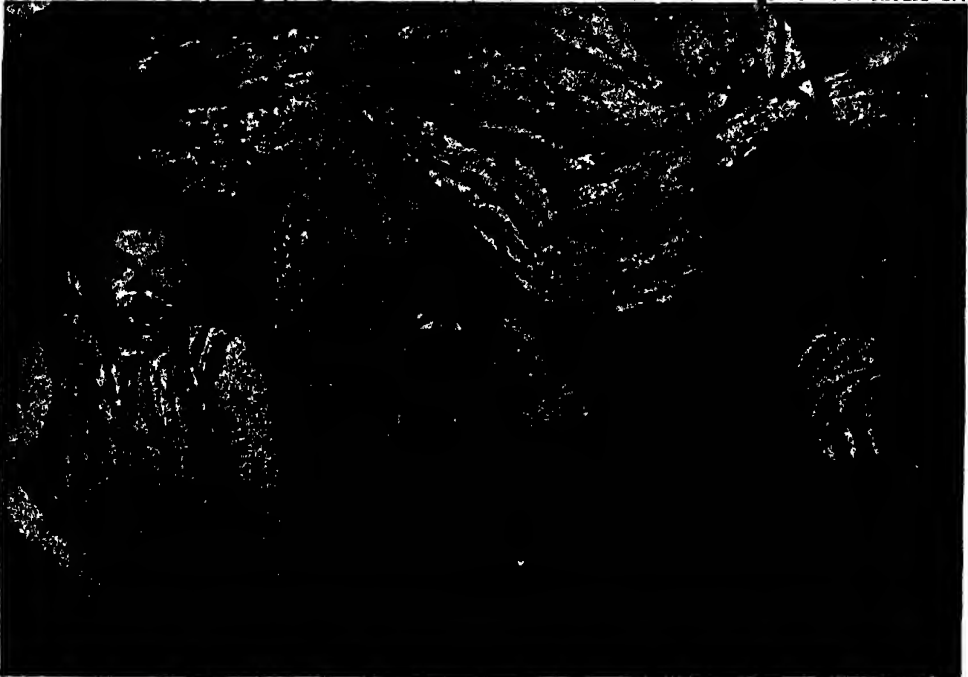


In the heart of the mountains, especially where hot springs were tapped, the heat was so intense that only by means of spraying cold water upon the walls to cool them, was it possible for the men to work.

A HORSE IN THE HEART OF A MOUNTAIN



This picture shows a horse inside the Alps. Our ancestors would have laughed at such an idea. Owing to the difficulties of photographing in the tunnel, the front of the horse is larger than it should be.

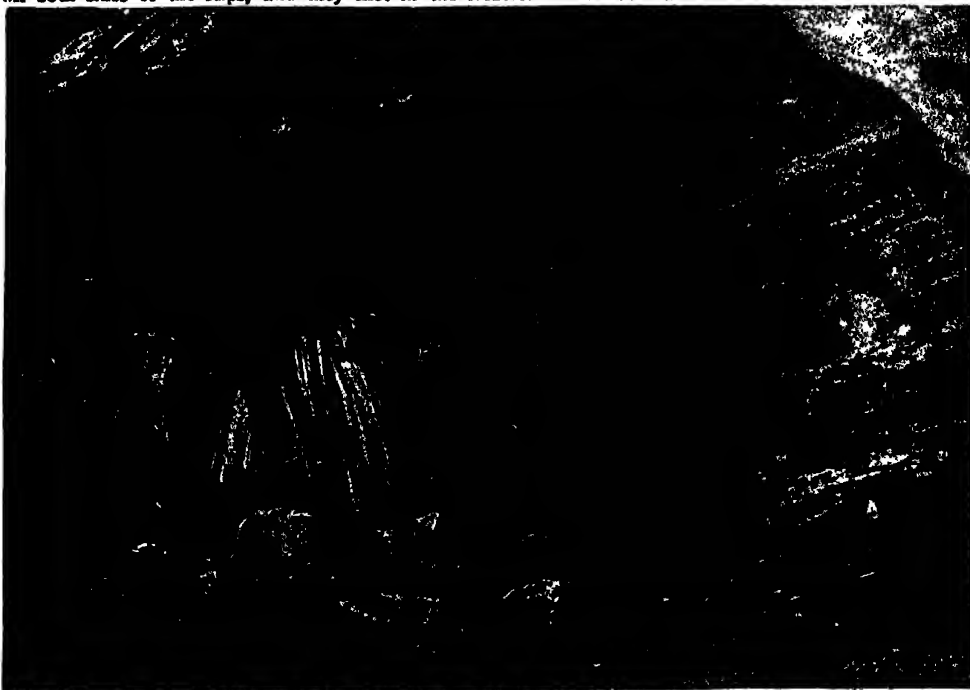


While the tunnel was being bored, the roof was supported by huge wooden beams; in some parts the pressure of water and loose rock was so great as to break massive beams, and even bend steel girders.

A THRILLING MEETING INSIDE THE ALPS



By means of a theodolite, which is the surveyor's chief help, the workmen were able to start boring on both sides of the Alps, and they met in the middle. The last wall of rock is about to be pierced.



This illustration shows one of the most thrilling moments in the making of the great tunnel. The workmen on the Italian side have just pierced the last rocky barrier that separates them from their Swiss comrades.

WHERE THE TRAINS COME BACK TO LIGHT



The Simplon Tunnel, the longest in the world, runs through the Alps from Brigue in Switzerland to Iselle in Italy. This picture shows Brigue, and on the left can be seen the double entrance to the tunnel.



This is the Iselle entrance to tunnel. In boring this passage, one of the world's greatest engineering feats, 3,740,000 holes were drilled, 1,496 tons of dynamite exploded, and 1,229,500 cubic yards of rock excavated.

CONTINUED ON PAGE 6311.

The Book of THE UNITED STATES

WHAT THIS STORY TELLS US

YOUR editors have admired Sir Walter Raleigh from their boyhood, and in other volumes of our book you will find much said about him. His most important claim to the admiration of American boys and girls has been hardly mentioned, however, and this story will tell you why Americans should respect his memory. He had the idea of building up a new England in America, and gave much of his money, and spent much of his time to bring it about, only to fail in the end. The failure was not his fault but was a great grief to him. The story of the "Lost Colony of Roanoke" is one of the most romantic in American history, and we wonder about the fate of little Virginia Dare.

THE LOST COLONY OF ROANOKE

THE first expeditions to the New World were not sent with the idea of permanent settlement. They spent their time looking for the passage to India and China, or else sought only gold and silver. Walter Raleigh, and his half-brother, Sir Humphrey Gilbert, were among the first Englishmen who desired to set up "little pieces of England" in America. They started with seven small ships in 1578, but whether to explore America or to capture Spanish treasure ships is not quite certain. At any rate they had a fight with the Spaniards, and returned without success. Sir Humphrey Gilbert was lost at sea, returning from a voyage to Newfoundland in 1583, but Raleigh was not discouraged.

The next year Queen Elizabeth made him a knight, and gave him permission to settle any "remote heathen and barbarous lands," still unoccupied by Europeans, giving the people who should settle there all the rights of Englishmen, including the right to make their own laws.

TWO LITTLE SHIPS SENT OUT TO EXPLORE THE LAND

Raleigh soon sent out two little ships commanded by Philip Amadas and Arthur Barlowe. They touched Florida, and then sailed along the coast until they reached what is now North Carolina, July 4, 1584. Following the coast they came to a gap in the sand banks which fringe the

CONTINUED FROM 6142

coast and entered Pamlico Sound. They landed upon an island, which to their eyes seemed a paradise. The stately pines, the cedars, and the abundance of grapes, which they reported grew down to the water's edge, so that "the very beating and surge of the sea overflowed them," filled them with wonder. Game and fish were also plentiful. The Indians called the island Roanoke.

The Indians were friendly and brought them fish, and were much pleased with a few trifles given them. The explorers visited the Indian village, and were charmed with all they saw. Two of the Indians agreed to go to England with them. The name of one was Manteo, and the little town on the island to-day bears his name. The whole country was named Virginia, in honor of Queen Elizabeth, sometimes called the "Virgin Queen."

Sir Walter Raleigh was delighted with the report of his explorers, and early in 1585 sent out over a hundred men under Ralph Lane to found a colony. Unfortunately Sir Richard Grenville, who commanded the ships which took them over, quarreled with the Indians and set fire to their corn.

THE FIRST COLONY AT ROANOKE DOES NOT PROSPER

The little colony built a little fort, but seems to have spent more time exploring and hunting gold than in planting crops. Some of them followed the broad Roanoke River, hop-

ing to find a passage to China. One of the party was John White, who had some skill in drawing. He made pictures in water-colors of the Indians, at work and at play, and of their houses. Some of these were published at Frankfurt, in Germany, in 1590, five years after they were made, to illustrate the story of the expedition, written by Thomas Hariot, the famous mathematician. Both story and pictures tell us much of Indian customs, before they were changed

been delayed, only to find the island uninhabited. He could not believe that all the men were dead, and did not guess that they had gone back to England. He thought that they were somewhere on the mainland, hunting gold or trying to get to China, and so he left abundant supplies, with a guard of fifteen men, and sailed back to England.

All England was then stirred up over the war with Spain, which all saw was coming, but Sir Walter Raleigh would



This is one of John White's pictures, showing in the foreground two Indian hunters, and behind other hunters chasing the deer. You can easily distinguish the figures he drew from life and those for which he drew upon his imagination. The physical strength of these men seems to have impressed the artist very much, and he brings out their muscles very carefully.

by the white men. The pictures themselves are in the British Museum in London. We show you here some photographs of the drawings.

As the Indians refused to sell their corn, the party began to suffer for want of food the next year, and the expected supplies did not come from England. Just at this time Sir Francis Drake, of whom you may read on page 862, stopped on his way home from an expedition against the Spaniards. He agreed to take the hungry, homesick men home, as they asked, and the island was deserted.

A little while later Sir Richard Greenville arrived with the supplies which had

not give up the idea of planting a colony. So in the next year, 1587, he sent out another colony, of about one hundred and fifty men, women and children, under John White, who drew the pictures we show you here. Governor White was ordered to go to Roanoke Island, get the supplies and the fifteen men left there the year before, and then go further north into Chesapeake Bay, where there were better harbors. The commander of the ships, however, was anxious to get back to Europe, and after a part of the men had gone to Roanoke Island in a small ship, he landed all the rest on the coast, and sailed away. So the third colony was forced to settle in the same place.

HOW THE SOUTHERN INDIANS COOKED



The methods of cooking among the Indians seem to have interested the first Europeans who came to America very much. The two pictures on this page show that the Indians on the North Carolina coast did not suffer for want of food. The earliest explorers tell us all kinds of food were plentiful. Here we see the preparation of a sort of stew, of fish, green corn and other things hard to recognize.



The waters of North Carolina to this day abound in fish of every description, and here is the simple method of cookery common among the Indians. Several varieties seen in the picture may be recognised by every one who has studied fish. The report of Sir Walter Raleigh's first expedition says that an Indian caught all that the ships could use in a very short time. Several were entirely new to the Englishmen.

THE THIRD COLONY, AND LITTLE VIRGINIA DARE

The party looked in vain for the fifteen men and the supplies, when it reached the island, but found only a skeleton here and there. The Indians had killed the men and taken all of the supplies they fancied. Since the ship had sailed away, the colony had to remain, and all set to work to build huts. In the party was the governor's daughter, Eleanor White, who was the wife of Ananias Dare. To

in order to live. Governor White, therefore, thought it necessary to take the one little ship left them and start back to England for help, when his little granddaughter was about a week old.

When he arrived in England the great Armada, which Philip of Spain expected to conquer England, was almost ready, and every ship in England was being prepared to fight. Sir Walter Raleigh made two attempts to send aid to his little colony. Once the ships were seized for



We are told that this picture represents a solemn festival dance among the Indians of what is now North Carolina, as seen by an Englishman more than 325 years ago. The savages, almost naked, danced around the circle of posts, striking them with their rattles as they passed. The one who could dance the longest and jump the highest was considered the winner.

them was born, August 18, 1587, soon after they landed, a little daughter whom they named Virginia in honor of the country. This little girl, Virginia Dare, was the first child born of English parents in what is now the United States. The county of North Carolina, of which Roanoke Island is a part, is called Dare County in her honor.

Since the Indians had not only killed the men, but had taken or destroyed the stores and supplies they were set to guard, the colony had great need of many things

the government, and the second expedition, under Governor White, was driven back by Spanish ships. Then came the Armada, about which you may read on page 862, and there were many months of fighting, in which Raleigh had a prominent part.

Finally poor Governor White, who must have been almost distracted, arranged with a sea-captain sailing to the West Indies to take him as a passenger, and to stop at Roanoke Island on his return voyage. Finally, in August, 1590,

when his little granddaughter would have been three years old, he reached Roanoke Island.

GOVERNOR WHITE DOES NOT FIND HIS GRANDDAUGHTER

On the island there was not a sign of human life; the doors of the huts stood open, and grass grew in the fort. Chests and boxes which had been buried had been dug up. Some of Governor White's books and drawings had been scattered to the winds. There were no signs of a

Before his death the colony of Jamestown had been founded by others and the weak little colony managed to exist.

WHAT BECAME OF THE LOST COLONY OF ROANOKE

The settlers at Jamestown, after their arrival in 1607, were told that this colony had lived peacefully among the Indians for several years, adopting the Indian mode of life. Finally the medicine-men had stirred up the tribe to murder all except four men, two boys and a girl.



Though Sir Walter Raleigh's attempts to found a colony in the New World failed, he was not forgotten. When North Carolina became a state it named the new town, built for the capital of the state, Raleigh, in his honor. This is the dignified capitol building in the centre of the town which reminds the people of the state of the great man who tried so faithfully to settle the country.

Photograph by Brown Bros.

struggle, and the only clew was the word CROATOAN carved deep on a great tree.

The ship proceeded toward that place, but one of those severe storms common on that coast sprang up and after beating about for several days the captain, in spite of the prayers of the father and grandfather, set sail for England, leaving the colonists to their fate.

Raleigh made two further efforts to find his colony, five in all, and after the failure of his last, in 1602, just before he was imprisoned, declared that he would yet see "an English nation in Virginia." He was sent to prison by James I, in 1603, and finally put to death in 1616.

Perhaps this story was true, perhaps not. If so, was this girl Virginia Dare?

To this day many believe that some of the colonists, at least, were adopted by the Indians, and married with them. As proof they point to the gray eyes and red hair sometimes seen among the Croatan Indians, who yet live in North Carolina. The Indians themselves say that they have been told by their grandfathers, who were told by their grandfathers, that their ancestors came over the sea and could "speak out of a book." All we really know is that the little colony disappeared, and has never been found.

THE NEXT STORY OF THE UNITED STATES IS ON PAGE 6387.

A MONSTER SHIP OF THE SKIES RETURNING FROM PATROL



The balloons of twenty years ago were small affairs at the mercy of every wind. Now they carry dozens of passengers, or fighting men, their engines drive them against the wind, and their rudders guide them. This is one of the giant airships used by the British. Notice the gun mounted on top and the two propellers on the car. The markings are to enable their own men to identify them, so that they will not be fired upon by their friends. These balloons are made in sections, so that if one of the gas chambers should be pierced it would not fall to the ground. In the ordinary balloon a small hole would empty the whole gas bag.

Copyright, Underwood and Underwood, N. Y.

THINGS TO MAKE AND THINGS TO DO

WHAT THIS STORY TELLS US

THE two great sports of the United States are baseball and football. Baseball is played by a great many more people, for thousands of boys and young men play the game at every opportunity. Fewer play football, but the public interest in the game is quite as great. The following description gives a general idea of the game, and will enable the reader to understand.

HOW TO PLAY FOOTBALL

DURING the autumn months of every year, thousands of American boys and young men are playing football. It is the favorite sport in colleges and high schools, and the newspapers print long accounts of the games, some of which are attended by many thousands of spectators.

It is a rough game and a boy who is not strong should not attempt to play it. Even strong boys are sometimes hurt, and, therefore, some parents and some schools object to the game, and do not allow their boys to play. However, if only strong boys, wearing proper clothes, play the game, there is not much danger of serious injury. Players should always wear regular padded football clothes, and strong shoes which fit closely around the ankles. Nose-guards made of rubber and shin-guards are often worn, but are not absolutely necessary.

Football is a very old and very widely played game. Several thousand years ago, we know, it was played by the Greeks. Through the Romans it was passed on to the Britons. The English gave it to America, where it has, in the last thirty-five years, developed into a game distinct from any played elsewhere.

The American Intercollegiate game, played by nearly all of the colleges and most of the schools, is played upon a rectangular field, 360 feet long and 160 feet wide, enclosed by white lines marked on the ground. Two lines, 300 feet apart, are called the goal lines. In the middle of each of these is erected a goal, consisting of two upright posts 20 feet high and 18½ feet apart, with a horizontal cross-bar 10 feet from the ground. Parallel with the goal lines, white lines run across the field 5 yards apart, and these lines give the field its familiar name of grid-iron. These are the official dimensions. In games between teams of boys, however, the field is often smaller, depending on the space available; and the 5-yard lines, which are merely an aid to the referee in judging distance, are usually omitted.

The ball is an inflated rubber bladder, with a leather cover, usually made of

Continued from 6170

pigskin. It is not round, but drawn out lengthwise into rounded points at opposite ends, to make it more easily handled. The game is played by two sides of eleven men each. Seven of these men are forwards, who form the rush line, and they take positions beside one another, facing the goal line to be attacked, as shown on the diagram. The man in the middle is called the centre. At each side of him stands a guard; outside of the guards come the tackles, and outside of these, the ends. The remaining four men compose the backfield. Of these, the quarter-back stands directly behind the centre; two half-backs take their positions at the sides of, and a little further back than the quarter. Still further to the rear, and behind the centre of the line, is the full-back's place. This is, in general, the arrangement of the men when in possession of the ball and lined-up for an attack. When on the defence, while the line-men keep their positions, the backs shift to meet different plays by their opponents, sometimes playing far to the rear in readiness to receive a kicked ball. Because they take so many different positions, we do not show the defence on the diagram.

The standard length of time of a game is sixty minutes of actual playing. This is divided into four periods called "quarters," of fifteen minutes each. Between the first and second quarters, as well as between the third and fourth, there is an intermission of one minute. The period of rest between the second and third quarters lasts fifteen minutes.

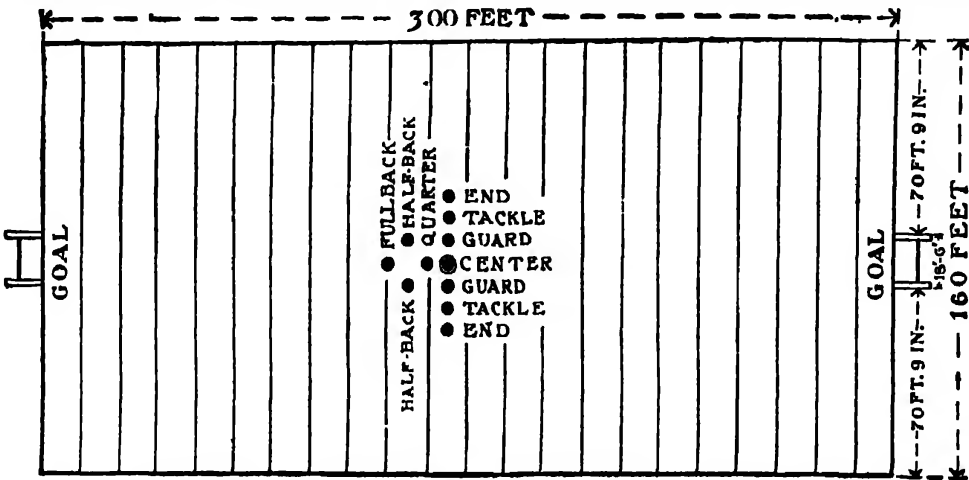
Scoring is accomplished in two ways: by touching the ball down behind the goal line, or by kicking it over the cross-bar of the goal. When a player succeeds in carrying the ball across the opposing team's goal line and there touches it to the ground, it is called a *touch-down*, and counts six points. When a team has made a touch-down, the ball is brought out into the playing-field, and one of the men of that side tries a *place-kick*, that is, kicks the ball from the ground where it is held in position by one of

Copyright, 1912, 1918, by M. Perry Mills.

THINGS TO MAKE AND THINGS TO DO

his team-mates. If the ball passes over the cross-bar, it is called a *goal from touch-down* and adds one point to the score. A *field-goal*, which counts three points, may be made without having scored a touch-down, by sending the ball from the playing-field, over the cross-bar, by means of either a place-kick or a *drop-kick*. A drop-kick consists in dropping the ball from the hands and kicking it just as it begins to rise from the ground. When any member of a team is forced to carry the ball behind his own goal line and there touch it down, his team is said to make a *safety*. This counts two points for its opponents. If, however, a team recovers, behind its own goal line, a ball kicked across by the *opposing side*, a safety is not counted. This is called a *touch-back*, it does not add to the score. After a touch-back, the defensive side has

into the charge of the *centre* of the runner's side. His team-mates line up at the sides of the centre on a line even with the ball and parallel with the goal line in the manner described before when speaking of the players. Opposite them, their antagonists line up. Both sides are now ready for a *scrimmage*. At the signal, the centre snaps the ball to the quarter-back, who passes it to the man in the back-field who has been called on to advance the ball by *rushing*. The rusher tries to carry the ball either through the line or around one of the ends. When he has been stopped, the ball is said to be *down* for the second time. Four such *downs* are allowed, in which to make a gain of ten yards. When ten yards have thus been gained, it is again called *first down*. Thus, the team continues its progress toward the enemy's goal, unless it either



The Field Laid Out for Football.

the privilege either of carrying the ball out to its own twenty-five yard line, and there putting it in play, or of kicking out to its opponents from any point within its own twenty-five yard line.

The two captains having decided the choice of goals and kick-off by tossing a coin, play begins with a kick-off from the kicker's forty-yard line. The players of this side line up even with the ball. One of their number, after a short run, kicks the ball into the territory of the enemy, who have scattered about their half of the field in readiness to receive the kick. The man who catches the ball starts on a run toward the hostile goal, protected as much as possible by his comrades, and striving to evade his opponents, who have come charging down the field as soon as the ball has been kicked. If the runner succeeds, by dodging, in making his way through the ranks of his opponents and crosses their goal line, he has scored a touch-down. Usually, however, he is tackled and thrown. When his course is thus arrested, the ball is said to be *down*. In that case, the ball is given, at that spot,

loses the ball on a fumble, or fails to gain the required ten yards in four tries. When a team perceives that it will not make the necessary ten yards in its four downs, the practice is not to rush the ball on the last down, but to kick it so as to place it as far away from their goal as possible. In either case, the ball comes into the possession of the other side, which now makes its attack in a similar way. A *forward-pass* may be made from scrimmage formation by any man in the back-field, and may be received by an *end*, or by any man who was in the back-field when the ball was put in play. Such a pass may be intercepted by any opponent.

Regarded as *fouls* and forbidden are: off-side play, that is, getting in front of the ball; holding or tackling any one but the man with the ball, tripping, striking, or kicking a man; "piling up" on a "downed" player. Boys who wish to play the game in earnest should get the book of rules and study them, and better still, get some person who knows the game to teach it to them. Football is hard to learn from a book.

MAKING A SET OF BOOKSHELVES

IN proceeding with our carpentry work, we must not try to advance too rapidly. We shall do better work if we make very simple things at first. Another point to keep in mind is the utility of the articles we set ourselves to make. Our work is likely to be more thorough if we know that it has to stand the test of perhaps daily use. Here we shall see how to make an exceedingly useful article—a set of hanging bookshelves—which we can attach to the wall.

Everyone needs an article of this kind, and everyone with ordinary intelligence and the necessary tools can make one. The sizes given in the sketches are good useful sizes, but the best sizes for the article to be made depend upon the space available for its accommodation.

Many of us remember how the Vicar of Wakefield had his family's portrait painted, and then found the canvas so large that it had to stand against the kitchen wall. Thus everyone who makes the bookshelves from these sketches must first decide if these sizes are the best in his individual case, and if they are not he must modify the sizes given to suit his own case.

We have first to decide what kind of wood we shall use. We could use oak, beech, or birch—perhaps oak looks better than the other two for the purpose—but all these are hard woods, and it will be much easier for us to use a soft wood, such as pine. Hard woods are much more difficult to work. We can use soft wood, and after the shelves are made we can stain them to imitate any of the harder and more expensive woods.

In picture 1 we show one side of the hanging bookshelves with all the sizes marked on it. We first cut out two pieces of the wood we are using—pine, for instance—to this shape. They must be fairly strong, and we should make them so that the finished thickness shall be not less than one inch, so we had better use wood $\frac{1}{4}$ inch thick and reduce it to one inch by planing it. The holes in the sides we can make with a chisel, and we must be particularly

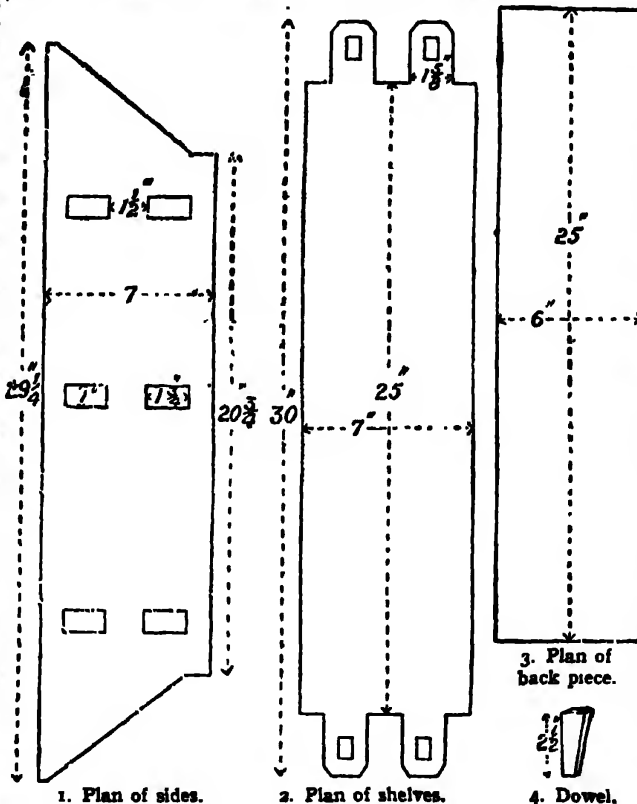
careful that each pair of holes is exactly in the same horizontal line, so that the shelves may be quite flat. It is safer to make the holes a little small at first, for it is very simple to enlarge them if necessary. We must also see that the two sides are exactly alike. Having cut the two pieces, we must finish them carefully with the plane so as to have them true and smooth, afterwards rubbing them well with sand-paper, or glass-paper, these being two names for the same material. We should use No. 1 sand-paper first, rubbing the surface and edges carefully until they are as uniformly smooth as the sand-paper can make them, and then we use No. 0 sand-paper, which will give them the final touches. It is more important to

have the sides smooth than it is to have the shelves smooth, because the former are more exposed to view.

Having made the sides, we turn our attention to the shelves, of which we shall make three. We shall make them all alike, and thereby simplify matters. Picture 2 shows the shape and the sizes which we should make them. The thickness of these pieces when finished should not be less than $\frac{1}{4}$ inch and preferably $\frac{1}{2}$ inch, so that the wood, when we begin, should be thicker than this, to allow us to have this thickness when the planing and

sand-papery are finished. Having made the shelves, we fit them into the sides so that the ends go through the holes we made in the sides, and if they do not quite fit we must make them fit. We shall want twelve taper pins, or *dowels*, for the holes in the ends of the shelves to cause them to retain their position in the sides, and these pins we can easily make. It will be much better if they are of hard wood—oak, beech, birch, mahogany, or walnut, for instance—even if the sides and shelves are of soft wood. There is more strain upon the dowels than upon the other parts, and as they are smaller, strength is necessary. The shape and size of dowel necessary are given in picture 4.

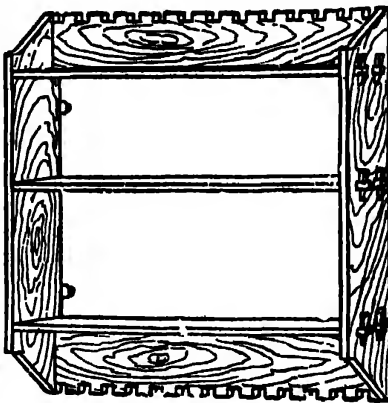
The shelves would do as they now are,



but would be liable to twist unless we strengthened them, and we shall do this by two back pieces, one above the top shelf and another below the bottom shelf. Picture 3 shows the sizes for these pieces, both of which are alike. Having cut them out and finished them, we nail them on, one above the top shelf and one under the bottom shelf. The set of shelves is now complete as far as carpentry goes. If we buy at the hardware merchants' 4 mirror plates, we can attach the shelves to the wall by their means. We must attach these mirror plates to the sides and not to the shelves. We put two at each side, as seen in picture 5. These would do well enough if they were put on to stick outwards, but in that case they would be seen when the shelves are attached to the wall. By putting them on as indicated in picture 5, the books will hide them and the shelves will look much better when they are fixed in the place they are to occupy.

If we have used pine or other soft wood, we can stain the shelves any color we prefer, and can imitate mahogany, rosewood, walnut,

or ebony. We purchase any of these stains in either small or large bottles, and apply it with a brush. Then we can put on some French polish if we wish to give the article an extra fine finish and can afford the modest expense. There are several other ways in which we can ornament the bookshelves. We may, if we like, make the top and bottom pieces "embattled" or "dentilated," as it is called, by cutting out pieces and leaving teeth-like projectors as shown in picture 5. We can carve the sides, or we can stain them with a pattern, using stencils, or we can burn some ornamentation, using a hot iron, or, finally, we can, if we wish, put some ornamental or imitation leather shelf-edging along the front of the shelves. Whether we decide to decorate in any



5. The completed bookshelves.

of these ways or not, we shall have an article of wall furniture which we shall find very convenient, and of which we shall feel very proud, because we have made it ourselves, but it will considerably add to its appearance if it is decorated with some simple design.

THE MYSTERIOUS CHINESE BAT

THIS is a miniature cricket-bat, 6 in. long, as illustrated in the picture. In a row down its centre, about half an inch apart, are three small holes, visible on each side, and bored, apparently, right through it. But things are not always what they seem, especially in conjuring. A comparison of picture 1, representing a front view, and picture 2, representing a back view of the bat, will show how, in this case, the reality differs from the appearance. Of the three holes, A, B, and C, shown in the front view, only B and C are genuine, so to speak, A being a mere make-believe, going only half-way through the wood. On the other side of the bat, in a line with B and C, but half an inch nearer the lower end, is another dummy hole, D.

With the bat is used a little peg of wood, bone, or ivory, in length about three times the thickness of the bat, and just fitting comfortably into either of the holes B and C.

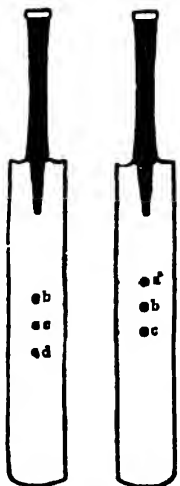
To show the trick, we, in the first place, call attention to the bat, asking the company to notice that there are three holes through it, as appears to be the case. We likewise exhibit the peg, which we may introduce with the remark that some of the company have no doubt seen the curious "jumping beans" which have been such a puzzle to naturalists, and that this little peg is a "jumping peg." Whether the motive power is the same in both cases you must leave the audience to decide.

We may here remark that whenever a conjurer can introduce in his "talkee-talkie" of a trick some little scientific fact having a resemblance, however remote, to the effect he is about to produce, he should not fail to do so. If we can start people on a wrong scent, they are all the less likely to hit upon the true one.

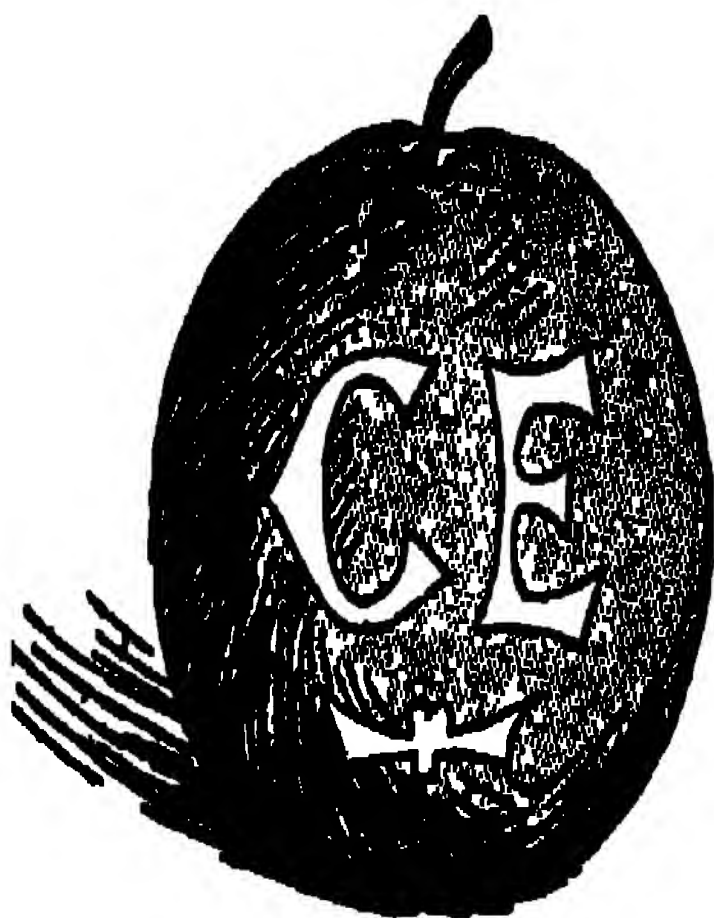
But to return to our jumping peg. The performer puts it, from the front, into the hole B in such a manner that it shall project equally on each side. Holding the bat upright, he asks everybody to take notice that he has put it in the centre hole. He then lowers the bat as if to show the opposite face of it but, as he does so, gives the handle a half-turn between his fingers. The effect of this is that the same side is still visible.

"Now," he says, "I shall command the peg to jump out of the middle hole and into the top hole." Under cover of a wave of the arm, he gives the bat another half-turn, thereby bringing the reverse side into view. On this side B is the top hole; and the peg appears to have jumped accordingly.

"Once more," he says, "we will place the peg in the middle hole." He then transfers it to C, which on the side now visible is the middle hole. Again he shows, apparently, both sides of the bat then commands the peg to jump, and makes the final half-turn as before, when the peg is seen to have jumped into the lowermost hole.



1. Front view. 2. Back view.
The mysterious bat.



APPLE WITH MONOGRAM



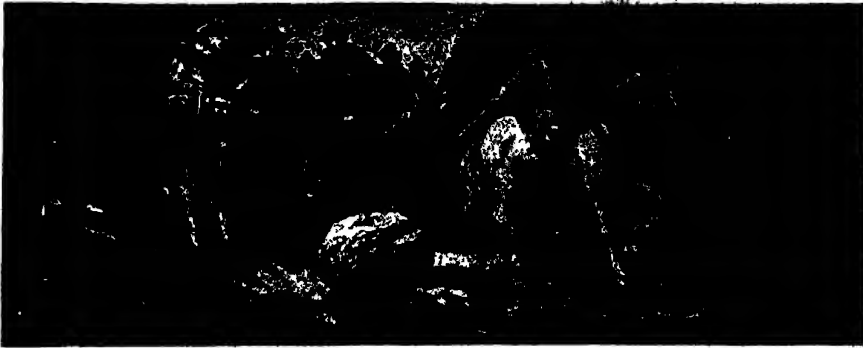
THE
HIDDEN
SECRET



2. The dancing Highlander.

sked by the audience, Bottom of the bag 1.





THE STONE IN THE ROAD

THERE once lived a king who ruled his subjects so wisely and so well that his fame spread near and far.

But everything was left by the people for someone else to do, and at last the king decided to teach them a lesson.

Now, it happened that one of the roads that led to the town passed through a hill. To this spot the king went late one night, and scooped a hollow right in the middle of the cart-tracks. Then from the folds of his cloak he took a small bundle, and placed it in the hole. Going to the side of the road, he loosened a large stone, which he rolled to the hole he had made in the road. There he placed it, so that it completely covered the opening.

Next morning a farmer driving his cart came that way.

"Ah," he cried, "the laziness of those people is terrible! Here is this big stone right in the middle of the road. I dare say it has lain there long enough for someone to have moved it. But no! everyone is too lazy to attend to such a simple matter." So saying, he pulled his horses to one side till his cart grazed against the side of the hill, and so passed on.

Presently down the road came a soldier. He sang gaily as he marched along; but his head was too far back

CONTINUED FROM 6296

for him to notice the stone, and in a moment he was sprawling in the roadway. He

picked himself up, grumbling at people's carelessness, and walked on. But he left the stone where he found it.

Later some merchants, with pack horses heavily laden, passed that way.

"This is a fine country!" said one. "I wonder how long that big stone has been lying there." But not one of them thought it worth while to move it out of the way, but the company divided and passed to right and left of it.

Thus it went on day after day, and no one even attempted to move the stone, though everyone blamed his neighbor for letting it lie. When three weeks had passed, and it still lay in the road, the king sent word to his people to meet him at this very spot.

"My good people and faithful subjects," he said, "it was I who put this stone here; and for three weeks everyone who has passed has blamed his neighbor for not moving it."

Then he lifted the stone, and showed them the hollow place beneath, in which lay a small bag labeled: "For him who lifts the stone."

He undid the string and a stream of golden coins fell out. After that no man in that country left the immediate task for his neighbor to perform.

THE WONDERFUL FRIENDS

A SHEPHERD lad was once sent by his father to carry food to his elder brothers, who were in the army of the king, encamped before a powerful enemy. When the young boy arrived, he found everywhere dismay and anxiety. For the champion of the other side had challenged any of their host to combat, and so mighty was he that none had dared to answer.

"Who is this man," inquired the shepherd lad, "that he should defy the armies of the living God?" He offered to go himself, and was brought before the king, and the king, after speaking to him, had him dressed in his own armor. But the lad said, "I cannot go with these, for I have not proved them." And he put them by. Then he took his shepherd's staff and his sling, gathered some smooth stones from the brook, and went out to meet the champion.

When Goliath, the mighty warrior, saw him, he was enraged, and cursed him in contempt. But the young patriot replied, "You come to me with a sword and a spear and a shield; but I come to you in the name of the Lord of hosts, the God of the armies of Israel, whom you have defied. This day will the Lord deliver you into my hand." And as the warrior bore down upon him he fitted a stone to his sling, and, whirling it about his head, let fly; and the stone struck Goliath on the forehead, and he stumbled and fell upon his face to the earth. Then the lad snatched the fallen hero's sword, and smote off his head. When the Philistines saw their champion was dead, they fled. But among the Israelites in an instant despair had changed to confidence and enthusiasm.

With a shout of joy, the army of Israel arose, and, flinging itself upon the enemy, drove them away in utter confusion.

Then the King of Israel inquired about the shepherd boy, but none could tell his name. "Inquire whose son the stripling is," he said; and presently the boy was brought before him, with the head of the giant in his hand, to answer for himself. "I am the son of thy servant Jesse the Bethlehemite."

Beside the king was his son, and this gracious young man, regarding the shepherd boy as he spoke to his royal

father, felt his soul suddenly knit with the handsome lad's, and there and then loved him as his own heart. So he spoke to the king, and the king said that the lad David should no more return to his father's home, but should live with him in his palace, and be a soldier instead of a shepherd. And the king's son, Jonathan, took off his royal robe, and put it upon David, and gave him his sword, his bow, and his girdle. And he held David's hand, and looked in his eyes, and they made a vow together of a friendship which should last till death.

Life had changed utterly and completely for David in an instant. From living in a humble cot, he went to live in a king's palace. From being a shepherd of the hills, he was a captain of soldiers.

What dreams of glory must have crowded the lad's brain! It seemed as if there was no height to which he might not soar, no fame he might not earn, no happiness he might not now enjoy.

In all the glory and honor which now invested him, there was one thing far more gracious and more glorious than all the rest, and this was the deep love of the king's son. Clothed in such a love, as with a kingly robe, the young David was something more than warrior and hero.

What Julius Cæsar was to the Romans, what Napoleon was to the French army, this and more was David to the hosts of Israel. The spell of the man's *soul* was over the people, and in him they beheld a captain from heaven, whose right hand was terrible with victory. So, wherever David went with the army, triumph followed, and, on the return of the soldiers, the streets were loud with his name and with music to his honor.

In this glory of young David, Jonathan rejoiced with all his noble and generous nature.

But the people shouted, "Saul has slain his thousands, and David his ten thousands!" And this cry pierced the king's chamber, and struck on his soul like the voice of Destiny. From that day Saul regarded David with growing jealousy.

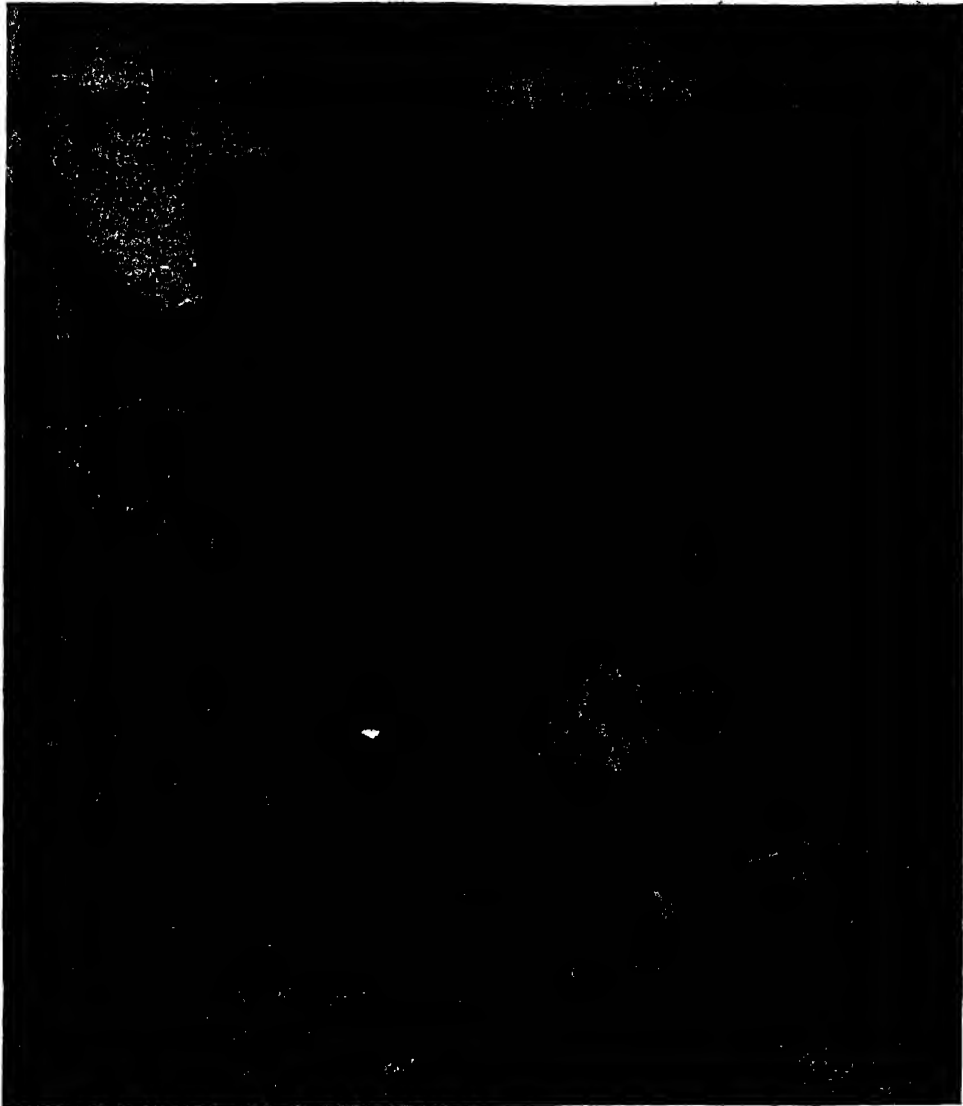
Slowly it came to the mind of the king that David was his enemy. At first he

THE WONDERFUL FRIENDS

had been envious of the praise showered upon his favorite; then he became suspicious. He regarded him as plotting for the throne of Israel.

He spoke about this idea to Jonatnan and his courtiers, saying that David was dangerous to the royal house. But

But, in a war that soon followed, David was again so successful that the king's suspicions returned, and, with his own hand, on a sudden impulse of hatred, as he sat with his successful captain, most basely the king sought to kill him with a javelin. Then David fled away from



Courtesy Tisot Picture Soc., N.Y. Copyright by de Brunoff, 1904.

THE STONE FROM DAVID'S SLING STRUCK FULL IN THE GIANT'S FOREHEAD

Jonathan, after he had warned David to lie in secret for a little space, went to the king and spoke so convincingly of David's honor and of his service to the nation that the king put away his suspicion, and said, "As the Lord liveth, he shall not be slain." So David returned to the court and lived as before.

the court that night back to his own house.

Jonathan came to him in secret, and the two friends comforted each other. Then Jonathan returned to soften the king's wrath against David. But when he spoke to Saul, the king this time burst out upon him with violent rage, bidding

him see that he would never succeed to the throne while David lived; and admonishing him to throw aside a treacherous friend, and to try and protect his own interests while there was still time.

To all this Jonathan replied, "Why should he be killed? What has he done?" And this gentle answer so enraged the king that he hurled his javelin even at Jonathan.

Then Jonathan saw that it was in

and wept together, till David was unmanned, and broke into tears.

Then Jonathan comforted the mighty conqueror, valuing his friendship more than life. "Go in peace," said he; "go in peace, because we have vowed, both of us."

Many years afterwards, when David, having gone through a multitude of adventures, was become a king himself, he heard how Saul and Jonathan had died together in battle. The news broke



The king's son felt his soul suddenly knit with the soul of the handsome lad.

vain to plead, and unsafe for David to be within reach of his father's arm. So he approached David in secret, by a signal agreed upon by them beforehand, namely that Jonathan would shoot three arrows as if at a mark. If he said to his attendant, "The arrows are beyond thee," it would mean that his news was bad. Then David fell upon his knees, bowed his head to the ground, and waited for Jonathan.

Jonathan came near, took David into his arms, and they kissed one another,

him down, and he cried out, "The beauty of Israel is slain!" and he forgot his own wrongs that he had suffered at the hands of Saul and said, "Saul and Jonathan were lovely and pleasant in their lives, and in their death they were not divided." Then the old friendship with Jonathan, with all its fragrance of innocence and youth, returned to him, and he mourned for his friend, "I am distressed for thee, my brother Jonathan. Very pleasant hast thou been unto me. Thy love to me was wonderful!"

THE GREY TERROR

THE FIRST BOY WHO PLAYED WITH A DOG

AFTER Swar's adventure with the lioness, the men and women in the camp were very watchful over the son of their chieftain. He was never allowed to go out alone beyond the camp where Cornhill now is. It was not till the Grey Terror arrived that he had any more exciting adventures.

"Game is getting wonderfully abundant," said Wawa, one morning, late in autumn, to his wife Bina.

Only a few minutes before he had gone out hunting, and he had returned loaded with spoil. The river swamp was crowded with wild sheep and elk and horses and oxen and deer. That day the tribe got enough meat to last them till the winter months. Everybody was wild with joy, except Wawa.

"Something terrible must be happening on the south side of the river," he said that evening, as the tribe was eating round the great fire on the top of the hill. "I went down to the ford. For a quarter of a mile the river is black with animals swimming madly across to the northern wilderness. They are all going toward the north, and the tribe will have to go with them or starve."

"Why?" cried all the men.

"I do not know why," said Wawa; "but I will soon find out."

He took his heaviest stone axe and his best stone dagger, and tied them round his waist. He then stripped himself of all his skins, and dived into the river, and struck out for the southern shore. None of the men and women of the tribe slept that night.

When morning came, there was no need for them to go out hunting. Herds of terror-stricken beasts came charging up the hill and sweeping through the camp, overturning the skin tents and scattering the tribe. Everything was in confusion when Wawa came limping up from the river. His stone axe and dagger were gone, and he was wounded in the leg.

"Don't trouble about the tents!" he shouted. "The Grey Terror is coming, and there is no time to escape! Out in the jungle for your lives, and get wood to make a great fire round the camp! Out, I say! Out, all of you—men, women and children—and collect brushwood!"

No one had ever seen Wawa look so terrible as he did then. No one dared to wait and question him. All the tribe rushed into the jungle, the children following their mothers, as Swar followed Bina. They helped to tear down the brushwood, while the men hammered with their stone axes at the smaller trees, or lighted fires at the roots in order to burn through the trunks. And the piles of brushwood grew higher in the circle around the camp, but Wawa would not let them stop. "More," he said, "more. We shall need every stick in the jungle."

At this awful moment Swar took it into his funny little red mop of a head to trot away into the swamp and see what was the matter with everything. Bina, of course, missed him, but thought he was with his father; while Wawa, who was limping round the camping-place and studying where to make the circle of fires, naturally fancied that his son was busy with his wife collecting wood.

All the jungle swamp was now empty of large animals. They had fled into the northern wilderness. Swar took the track toward what is now Hampstead, which he had followed on his first voyage of exploration. There was no sound to be heard save that the grey monkeys chattered in the tall forest trees as he passed by, and great long-legged storks, searching for frogs in the pond, slowly flew away at his approach.

"I don't know what I shall hunt to-day," said Swar to a monkey that was peering curiously at him from the lowest branch of a fig-tree. "Could you tell me where I could find the Grey Terror that daddy spoke of? I must kill it, because it is frightening mummy, and then I will wear its skin when my lion robe is torn."

Swar thought that the monkey would understand him. It looked such a quaint human creature, as it peeped down at him, that he was sure it was some strange sort of child. By a stroke of wonderful luck, the monkey that morning happened to be in a mischievous mood. Plucking a large juicy fig, it threw the fruit at Swar, and struck



SWAR FOLLOWED THE MONKEY FROM TREE TO TREE

him plop! on the face. In the twinkling of an eye Swar had made up his mind. This grey, ugly thing which threw figs at you when you asked it a question was surely the Grey Terror itself, he thought.

He was up the tree in a minute. No man or boy of modern times could climb with the agility that this primitive little savage displayed. He was almost equal to the monkey at its own game. He followed it from tree to tree, never touching the ground once, but swinging from branch to branch, like a little human ape. Sometimes he stopped to breathe and nestled in the forking branches of a tree, and made a meal on nuts and figs. And there, in the tree beyond him, squatted the monkey, imitating his movements, and feeding on

what he fed on. It made Swar angry and he kept chasing the animal till nightfall. By that time he was so tired out that he fell asleep over his last meal, and the monkey came and squatted beside him, high in a branching oak-tree, and put its hairy arms gently round the sleeping boy.

All that night there was a strange noise in the silent forest. Pitter-patter, pitter-patter it went on the leaf-strewn ground. Now and then the shriek of a rabbit was heard. And once, as the autumn moon shone for a moment the light from it fell on a vast, grey, moving mass, which was silently sweeping through the forest. A thousand glittering eyes instantly looked up, and the strange stillness of the jungle was suddenly broken by a loud, wailing cry from a thousand red throats. Then the clouds came together, and silence and darkness again fell on the forest, and the

pitter-patter, pitter-patter noise gradually died away.

Swar was very angry when he awoke in the cold dawn, and found the monkey's arm around him. He did not think what it was that had kept him warm all night and he had forgotten all about the Grey Terror. But he felt hungry and lonely, and he wanted to get back to his father and mother.

"I don't want to play with you," he said, as his strange bed-fellow began to gambol about the tree and chatter to him. "I'm going back to the camp."

He climbed down from the oak-tree, and set out to find the camp by the river. As you can guess, he was a good distance away from his home. Happily, his father had taught him how to guide himself by the position of the sun, and

after a tramp of four miles he came to the shore of the Thames at the place where Chiswick now is.

"Now I know my way home!" he said joyfully.

And, turning right to the east, he trotted along the river-bank towards Westminster. Of course, there was no path along the river in those distant days. The land was covered with a dead undergrowth, broken here and there by irregular tracks made by the woolly elephants and the huge buffaloes as they went down in herds to the water to drink. At Westminster, where the Thames was shallow, all the jungle for about half a mile had been trampled down flat by the huge droves of terror-stricken beasts that had fled before the Grey Terror into the northern wilderness.

As Swar was passing over this strange place, a little animal came out of a muddy tuft of reeds, and began to follow him. Swar did not notice it until it licked his bare legs, and made him turn round with a start. He had no weapon, and he gave a cry of fear, and ran away as fast as he could. The little animal easily overtook him. Instead, however, of trying to hurt him in any way, it ran by his side, and attempted to play with him. Swar at last stopped—it was no good being frightened—and looked at him in a friendly way.

"You're a funny little thing," he said. "You're like a young wolf-cub, but your grey fur is finer and softer, and you're not a bit fierce."

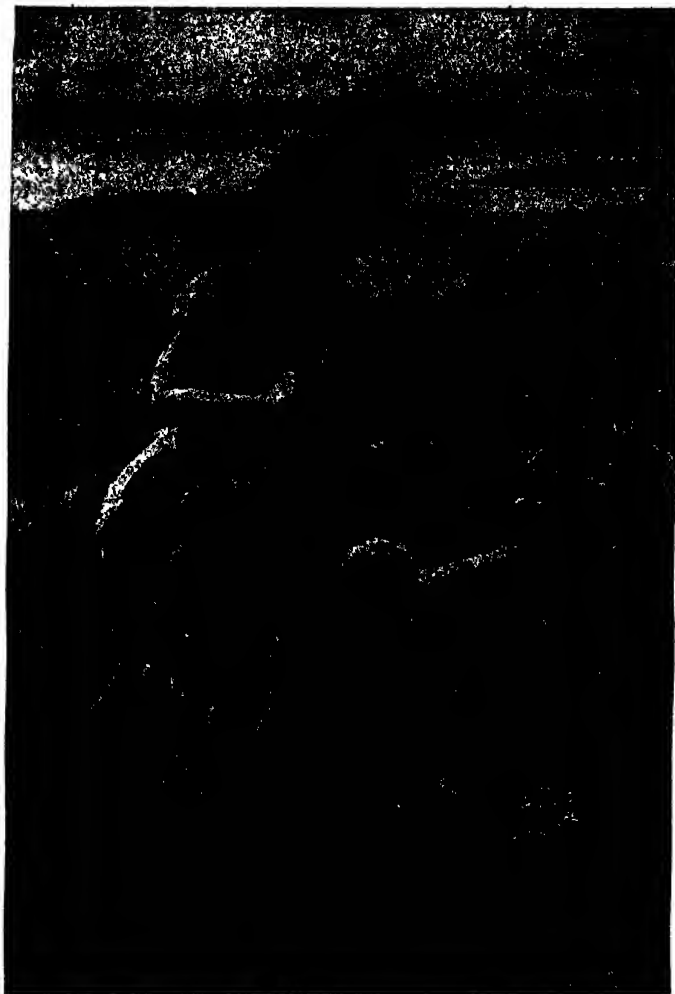
It was, indeed, only a frolicsome little puppy-dog. Swar found it a delightful playmate. They chased one another in turn from Westminster to Cornhill. Panting from the exercise, and wild with delight over his new pet, Swar at last rushed up to the

camping-place of the tribe, and shouted and capered outside the circle of burning wood.

"Joy, joy, joy!" cried Wawa. "Swar is safe! The Grey Terror has not eaten my son. Beat down the fire, men, and let him in!"

Men, women, and children hastily caught up whatever was handy—skins, sticks, and stone spears—and raked some of the burning wood away to make an entrance for the little boy. Bina and Wawa rushed forward to embrace him, but the little puppy-dog got through first, and rushed towards them, barking loudly out of sheer excitement.

"The Grey Terror—the Grey Terror! It is upon us! The river! Jump into the river! It is our one and only chance! Oh—oh—oh!" shouted all the tribe loudly, in a madness of fear.



THE LITTLE ANIMAL TRIED TO PLAY WITH SWAR

They leaped through the line of fire at the water-edge, in a wild, confused, and swift movement. Only Wawa remained behind. Lifting up his great stone axe, he sprang to the opening made in the fire circle, shouting:

"Run with your mother, Swar! There is still time. I will keep the Grey Terror back while my life lasts!"

Swar took his little puppy up in both arms, and began to run to the water as fast as his little legs would carry him.

"Kill it, boy! Kill it!" Wawa shouted to his son. "That is one of the Grey Terrors you are carrying!"

Swar stopped running in blank surprise, and looked first at his father, and then at the puppy. The little dog began to lick his face. In the meantime, Wawa had turned, and he was now gazing, open-mouthed with astonishment, at the empty jungle stretching from Cornhill to Walbrook. He had expected to see a vast, grey, surging mass of fierce beasts charging up the hill, their hungry jaws open to devour the tribe.

"This is one of them—a very little one," he said at last, going up to Swar, who, very puzzled, was sitting on the

ground, clutching the puppy as tightly as he could. "But the great herd of the Grey Terror seems to have swept northward on the trail of the forest cattle. The tribe is saved then. Where did you find this little beast, my son? Wow-wow-wow! How playful and friendly the little Terror is!"

Wawa patted the puppy, and it licked his hand, while Swar was telling his father his adventures with the monkey, and his finding the dog.

"It was well for you, my son," said Wawa gravely, "that you slept last night high in an oak-tree with your mocking playmate's hairy arms around you. The Grey Terror came sweeping up to our camp early in the evening, and even with a double line of fires we had trouble in beating them off.

"They must have passed you in the darkness when they turned north. Yes," he added, as Swar looked up to him with imploring eyes, "you can keep your little grey beast as a playmate if you like. At least, unless he grows fierce and dangerous."

And that was how Swar came to be the first human being who had a faithful dog to help him when he went out hunting.

WHY THE SWALLOW BUILDS ON THE WALL

IN the days of long ago, when the first swallow skimmed lightly over moor and meadow, she was very proud of her pretty plumage and her long, forked tail. She flew low upon the water that she might see her own reflection upon its clear surface and at last, so occupied, became so vain that she could think of nothing but how best to show herself off before all her feathered friends. So it came about that in time she quite forgot how to build a nest.

After trying in vain for a time, she decided to ask help from some of the other birds. She went to the thrush, for she thought she looked the most good-natured, and asked her help.

"I will show you gladly," said the thrush. "First, you take some of these old grass stalks."

"Yes," said the swallow.

"Then take a lump of clay," went on the thrush, "to plaster them."

"Oh, yes, I know!" broke in the swallow.

"Plaster them exactly like this."

"Yes, I can do that all right."

"Then you turn it up like this."

"Oh, yes, I know!" again said the swallow.

"And then you——"

But before the thrush could add another word the swallow interrupted again.

"I know," she said; "of course."

This made the thrush angry.

"Well," she said, "if you know so much, why do you come bothering me with your questions?"

So saying, she flew away to look after her own nest and eggs.

Only half round the nest had been built, and the swallow, thus left to herself, could not make out how to finish it. She tried again and again, but all in vain. So she stuck the side she knew how to build on a wall, and made it do.

And thus it happens that the swallow, through thinking she knew more than she actually did know, has only half a nest to this day, as you can easily see.

THE ROBBER AND THE MONK

A MONK who belonged to one of the monasteries near Paris used to travel from village to village in the neighborhood collecting money for the support of the monastery. One day, when he was returning home through a wood, a robber suddenly stepped in his path, and, presenting a pistol, demanded that the bag of money should be handed over.

The monk was of course unarmed and he at once saw that he would lose his life if he resisted, so he gave the robber the bag, asking only one favor in return.

"What is that?" said the man. "I never grant favors in the dark."

"Well," replied the monk, "when I get back to the monastery, I don't want my brethren to think I tamely gave up the bag of money without making a fight, so I am going to hold out my

cloak, and I want you to fire a bullet through it. Then it will be clear to my brethren that my life was really in peril."

The robber fired, but the monk could see no hole made by the bullet, and expressed astonishment.

"Ah!" laughed the robber. "That is not surprising, for I will tell you in confidence that I never load my pistols with bullets; I simply fire off gunpowder, and that is sufficient to make any traveler give up his money."

"Really!" answered the monk; and with that he sprang suddenly upon the robber, overcame him and bound him, and so recovered his money. Then he deprived the robber of his pistol, that he might not terrify any other travelers, and for the purpose of convincing the other monks of the perils of his journey.

THE MAN WHO BROKE THE NEWS

THE son of a country landowner went to Paris to study at the University, and, after he had been there some time, he was astonished one morning to see an old manservant from his father's house.

"Why, what is the matter?" said the young man.

"The cat is dead," was the reply.

"The cat dead! Why, what did the poor animal die of?"

"Of indigestion, through having eaten too much meat."

"Too much meat! Where did the meat come from?"

"From your poor horses."

"The horses! Are they also dead, then?"

"Yes, the poor animals died from exhaustion, through having to carry so much water."

"What was the water for?"

"To put out the fire at the house."

"The fire at our house?"

"Yes, it caught fire because the maidservant forgot to put out the candles."

"What candles do you mean?"

"Why, the candles used at your father's funeral."

"My father's funeral! Do you mean to say my father is dead? Why did you not tell me at once?"

"Well, I was told to be sure to break the news to you as gently as possible."

THE PAIR OF NEW BOOTS

A FRENCH soldier who was serving with his regiment in Algeria wrote home to his old father asking that a new pair of boots might be sent to him.

The father went to the village shoemaker's and bought a pair of strong boots, and then asked one of his acquaintances how to send them.

"You can telegraph them," said he.

"But that will cost a great deal of money," replied the old man.

"Oh, no," said the other, "it will cost you nothing. All you have to do is to take them out into the open country and hang them on the telegraph wire."

The old man decided to follow the advice, but hardly had he departed when a beggar, who had noticed the performance, went quietly, and, taking down the new boots, hung up his old and ragged ones in their place.

The father, feeling curious as to whether the boots had gone, went out of the village to see.

"Bless my soul," said he, "this telegraph is a wonderful thing. Here, for nothing, have I been able to send a pair of boots all the way to Algeria, while my son has been able in very little time to send his old ones back again to me."

STORIES TOLD IN INDIA 3,000 YEARS AGO

THE BLUE JACKAL

A JACKAL, prowling round a town one night, fell into an indigo-tank, and came out dyed blue.

"No one will know me now that I am this splendid color," said he, "so I will pretend that I am king of all the beasts."

He began by ruling over the jackals, and then the lions and the tigers submitted to him. This made him proud and insolent, and he no longer took any notice of his old jackal friends.

One night they gathered round the self-made king and began to howl, and as soon as the blue jackal heard the others yelling, his natural instinct led him to do the same, and at once all the other creatures in the jungle knew him to be nothing better than a jackal, and he lost for ever his crown.

Silence is sometimes golden.

THE TRAVELER AND THE HERON

A WEARY traveler lay down to rest under the shadow of a fig-tree and went to sleep. In the tree lived a crow and a heron, and the heron had often been warned he would come to a bad end if he kept company with an evil crow.

As the sun shifted, so the shadow of the tree moved away from the traveler, and he was left exposed to the sun. But the heron, seeing this, felt sorry for him, and spread out his wings and shaded the weary traveler. The evil crow, however, laughed at the heron, and then, to annoy the traveler, dropped a stone upon his face and flew away.

When the traveler, smarting from the sting of the stone, jumped up and seized his bow and arrow, he saw only the heron in the tree above, and, thinking that this was the culprit who had thrown the stone, he fitted an arrow to the string, and fired and killed the heron.

Avoid evil companions or they may lead you into serious trouble.

THE CROWS AND THE ANKLET

A PAIR of crows lived in a hollow tree, and there also lived in the bottom of this tree a fierce snake that used to eat the young of the crows as soon as they were hatched.

One day when the son of the king

came down to the river close by to bathe, the male crow flew down, and, seizing a golden anklet that the prince had removed and laid on the bank, he flew away with it and dropped it inside the hollow tree.

Of course, as soon as the king's son came to the bank again after bathing to put on his clothes, he noticed the anklet was missing. There was a great hue and cry, and every place was searched for the missing jewelry. At last the anklet was found in the hollow tree, and the serpent was also found by the prince's attendants, who instantly killed it.

Skill will make up for lack of strength.

THE ELEPHANTS AND THE MOON

IN a time of drought a number of elephants had difficulty in finding water for themselves. But at last they discovered a pool, near which lived a colony of hares, and in going to and fro the elephants used to trample upon several hares every day. At last the matter became so serious that a meeting of the hares was held, and, after a good deal of discussion, an old hare, known for his wisdom, undertook to make the elephants cease using the pool.

Standing erect upon a hillock, as the sun went down, the little old grey hare listened for the crashing in the jungle which would tell him that the great beasts were coming down for their evening drink. When the sound reached his ear he stiffened his thin form, though his heart beat violently, and as the leader of the elephants approached, the hare said:

"Sir, I am an ambassador from the moon, who wishes you to know that this is his pool, and that the hares whom you are driving away are its guardians."

"We know nothing of this," said the elephant.

"Well, if you come here to-night, you will see the moon in the pool, shaking with rage."

The elephant went. He saw the reflection of the moon, which quaked as the water rippled, and in great fear he promised that the elephants should trespass on the pool no more.

Superstition often causes those who are mighty to tremble.

CONTINUED ON PAGE 6339.



The beautiful harbor of St. John's, the capital of Newfoundland.

THE DOMINION OF NEWFOUNDLAND WHERE THE CODFISH REIGNS

NEWFOUND-
LAND, the first
born English colony

in America, is an island at the mouth of the Gulf of St. Lawrence, which it protects from the full sweep of the Atlantic Ocean. It is not part of Canada, but as it is part of the British Empire, and lies so close to Canada, we tell its story here. The island, roughly triangular in shape, with its area of 42,734 square miles, is one-third larger than Ireland. The coasts are everywhere bold and rugged, presenting a high line of broken cliffs, indented with numerous bays and studded with countless islands.

THE BEOTHUKS, THE EARLIEST INHABITANTS OF NEWFOUNDLAND

The earliest known inhabitants were the Beothuks, a numerous and powerful race, who may have been related to the North American Indian. When John Cabot discovered the island in 1497, these people were at the height of their prosperity. The doom of the natives was sealed with the coming of the white man. The struggle which was waged in the mainland between white man and Indian was also carried on in Newfoundland. The destruction was so complete that all we have left are a few skulls, a skeleton, some bones, and a collection of implements in a museum at St. John's.

THE PEOPLE OF THE ISLAND ARE NATIVE BORN

The population of the island is 247,710, of which one-third is engaged in fishing. The majority of the people live along the southeastern coast. There are few settlers in the interior and the French claims were a check to

CONTINUED FROM 6126

settlement on the west shores. The inhabitants are chiefly native born descendants of Irish, English and Scotch ancestors.

The chief occupation of the people is cod fishing. In many villages dried cod serve as money, with which people buy food, clothing and fishing tackle. There are three distinct branches of the industry, the Banks, the Shore and the Labrador fisheries. The Banks lie southward of the island, about thirty miles distant from the nearest land, and cover a great area. To these fishing grounds, which are huge submarine islands, which rise nearly to the surface of the water, the fishermen of France, Canada, the United States and the island go during the fishing season. The grounds are on the "high seas" and therefore subject to the jurisdiction of no country or nation. Schooners carrying from twelve to twenty men sail from the mainland and anchor. The crews go out from the schooners in pairs in flat-bottomed boats called dories. They fish with trawls, which are long lines supported at each end, and from which many short lines with baited hooks hang. Oftentimes a passenger on an ocean steamer is surprised as the fog lifts to see scores of small dories, anchored apparently in mid-ocean. Fogs and storms annually cause the death of many of these brave and hardy fishermen.

IMPORTANCE OF THE COAST FISHERIES TO THE ISLAND

Bank fishing is not of very great importance to Newfoundland. By far the greater number of the fishermen are engaged in coast fishing.

Shore fishing is carried on from punts or skiffs. Those fishing from punts use ordinary hooks and lines. The fishermen with skiffs use traps. A trap is an enclosure of netting sunk in the sea and so arranged that the schools of cod in swimming by will blunder into it and become ensnared. The coast fishing is not so good as it was a few years ago. Thousands of fishermen, taking with them their wives and children, leave their homes every June and sail to the fishing grounds off the coast of Labrador. Some live in turf huts or timber shacks along the coast, while others live on the schooners. The women and children assist in curing the fish. They fish until October, when they return home with their catch.

THE FISHERMAN AT HOME IN HIS VILLAGE

A number of little, square, white-washed, one story cottages nestling in the cliffs overlooking a bay or a cove is a typical fishing village. A score or more goats scamper among the neighboring rocks, as each household has one or more of these animals. Out into the water of the little harbor are built the stages at which the men land their fish. The cod are scaled by the men as they are caught, but the "splitting," "heading" and "salting" is generally done on shore by the women and children. After salting, the fish are taken to the "flakes"—rude scaffolds covered with under-brush—and there spread out to dry.

The hardy, sturdy fisherman lives, as a rule, from hand to mouth. The season's catch is usually mortgaged to the village merchant or "planter," who in turn loans sufficient to carry the poor fisherman through until the following October. This process continues from year to year. The boys are reared on the water and at six can manage a sail. After the fishing season closes in October, the men do little besides mend their nets and fishing tackle. They love to tell stories of their adventurous life and eagerly wait for the season to open in March. The Newfoundland fisherman, inhabiting more than a hundred such villages, is a hardy, burly, uncouth, warm-hearted, hospitable fellow, a blend of English, Irish and Scotch blood.

WHY COD ARE SO PLENTIFUL ABOUT THE ISLAND

The reason why the world's greatest cod fishing ground is centred at this island

is interesting. The Arctic current which flows past Newfoundland carries with it hundreds of thousands of tons of minute living matter upon which the small shell-fish and other creatures of the sea feed. In turn, these become the food of vast schools of cod. It is strange but true that the Arctic seas and rivers, in spite of the great cold with which they are surrounded, contribute most abundantly to this supply of living slime. Unless this flood from the Pole is stopped, the fishermen cannot lessen very much the supply of cod. Uncountable millions of cod will continue to come from the darker recesses of their unknown deep-sea homes and throng the Banks and shallower waters where conditions are suitable for breeding and where an abundant supply of food is found.

COD-LIVER OIL AND OTHER THINGS

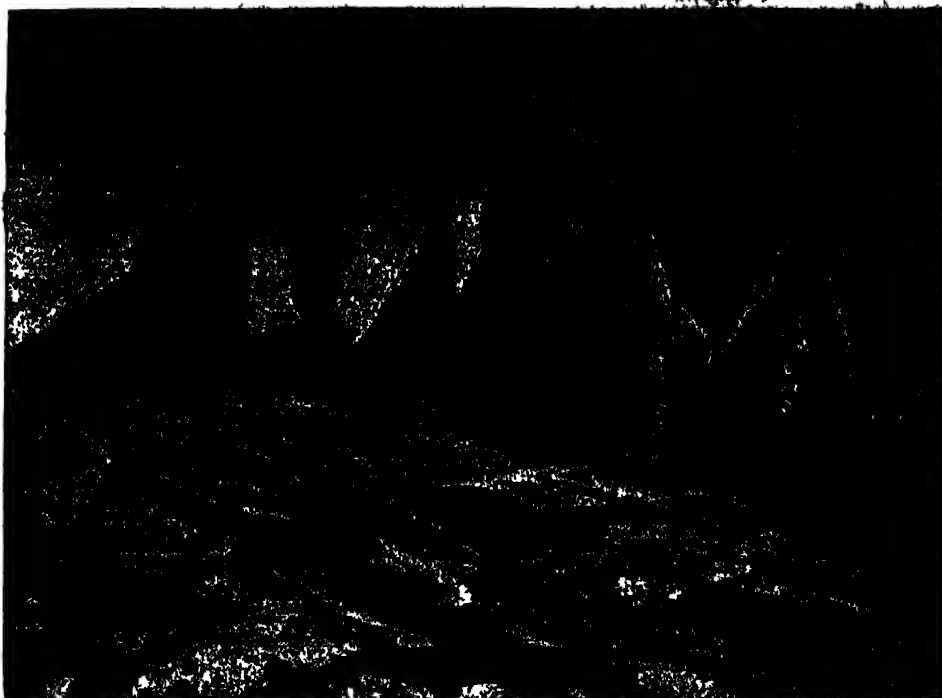
All parts of the fish are used. Cod-liver oil is extracted from the livers. Glue is made from the skins while the heads and entrails are used for the manufacture of fertilizers. Great swarms of herring arrive along the coast during the early part of September. Large quantities are used as bait for cod, and packing herrings for food is fast becoming an important industry. Several lobster canneries are doing a thriving business along the southern coast. The sealing industry is not so important and profitable as it was and the open season for seal fishing now lasts only one month in the year, from the middle of March to the middle of April. If this restriction had not been made, the seals would have been killed off.

The Newfoundland dog, of which you have all heard, has almost died out on the island. It is supposed to have developed from a cross between the sledge dogs, which are closely related to the wolf, and other dogs brought from Europe.

MINERALS AND FORESTS IN THE ISLAND DOMINION

The early history of Newfoundland is filled with the story of struggles between the English and the French, for both nations claimed the island. It was ceded to Great Britain by the Treaty of Utrecht; but the treaty provided that the French were to have the same rights of fishing on the western shore as the English, and that neither nation was to make a permanent settlement on that shore.

CATCHING AND CURING GODFISH



Newfoundland may be said to live from the sea. The fisheries here are very important, and the chief subject of conversation is the size of the catch. These fish will soon be split open and spread to dry on the platform you see below. Later they will be packed and sold. The fishermen are very fine sailors.



The fish shown in the picture above have been split open and are here being rubbed by the fishermen with a salt mixture to preserve them. After this has been done and the salt has well soaked in, they are spread out in the sun to dry, as shown in the picture on the right. The racks upon which the fish are drying are called "flakes." The fish look like thick fleshy leaves as they lie in piles.

This provision led to serious troubles between Great Britain and France later on, and it was not until 1904 that the question was finally disposed of.

The early settlements were made in defiance of the rules laid down by the merchants who provided capital for the fishing. These merchants or "venturers," as they were called in the beginning, wished to keep the island as a fishing station merely, and contrived to have laws made which forbade permanent settlements within six miles of the shore. Men employed in the fisheries were forbidden to bring their families to the island, to live there during the winter, or to build themselves more than a rough shelter for the season. Families did find their way there and settlements were made; but the settlers were all fishermen, and fishermen for the most part they have remained. The men who were ready to brave any danger on the deep, made small effort to explore the land or to cultivate the narrow shore line that they knew. The villages and settlements were scattered, and there was much isolation and poverty. The fishermen are very brave, and are fine sailors, and many of them find their way into the British navy. Their heroism in the Great War has been noted even among the many heroic deeds of that dreadful time.

With the building of roads and railways, however, a new era was begun. The island was explored, and it was found that the interior is not, as was supposed, a desert. On the contrary, Newfoundland is a treasure house of minerals. There is scarcely a man who cannot show you on his mantel-shelf a specimen of the copper, iron, nickel and even gold ore of his neighborhood. Several thousand tons of copper and iron are produced yearly, but the industry is only in its infancy. Various mines of coal, asbestos, nickel, lead, and gold in different parts of the island are in various stages of development, and give promise of becoming properties of great value. Along the coasts and in the interior are large tracts of heavily-timbered land. Lumbering operations are extending rapidly. Large pulp mills have been built, and a great deal of pulp for the making of paper is exported, chiefly to England.

Farming has not been followed to any extent. Out of a large area of over five million acres of tillable land only one

hundred thousand are under cultivation. The people do not care to work in factories and are not adapted to such employment. Nevertheless interest in farming is increasing, and the pulp mills have already brought greater prosperity to the island.

St. John's (32,292), the capital of the island, is on the southeast coast and is situated on one of the finest natural harbors in America. The city is entirely devoted to the fishing business. Harbor Grace (8,000), Carbonear (4,500), and Bonavista are the only other towns of importance.

THE GOVERNMENT OF THE ISLAND

The island did not join the Dominion of Canada, and the British Government still appoints the Governor. There are two chambers, the legislative council of fifteen members, appointed for life by the government of the day, and the legislative assembly, consisting of thirty-six members, elected for four years by ballot under manhood suffrage. The executive government is a ministry responsible to the legislature and holding office so long as they command a majority in the assembly. Newfoundland was made a Dominion in the year 1918 in recognition of the help given to the empire in the Great War.

The government of Newfoundland also controls the coast of Labrador, that strange, desolate, thinly-populated country which deserves a whole article itself. Perhaps you have heard of the work of the medical missionary, Doctor Wilfred Grenfell, who is devoting his life to the improvement of the lot of the fishermen there.

The possession of so many useful minerals, such vast tracts of forests, such large areas of fertile plains makes Newfoundland a country most favorably equipped for mining, lumbering, agriculture and manufacturing. With capital, enterprise and labor the island is destined to become a great producing and exporting country.

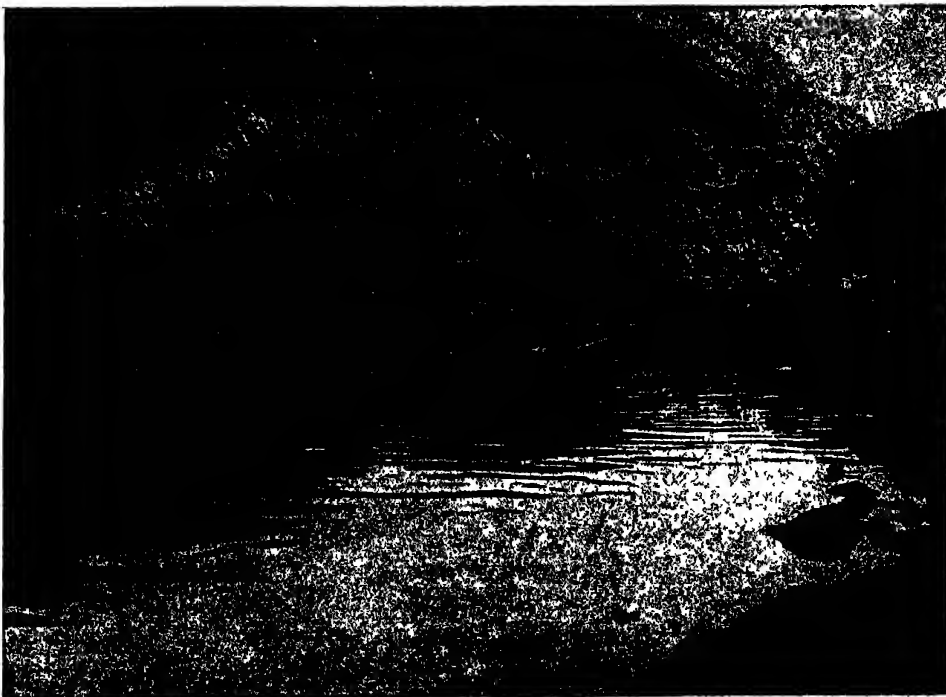
Newfoundland, as we have read in other parts of the book, has played a great part in the history of wireless telegraphy. It was on a high cliff near St. John's that Marconi set up the first instrument that caught a message, through the air, across the ocean.

THE NEXT STORY OF CANADA IS ON PAGE 6345.

WHERE THE SEA GIVES A LIVELIHOOD

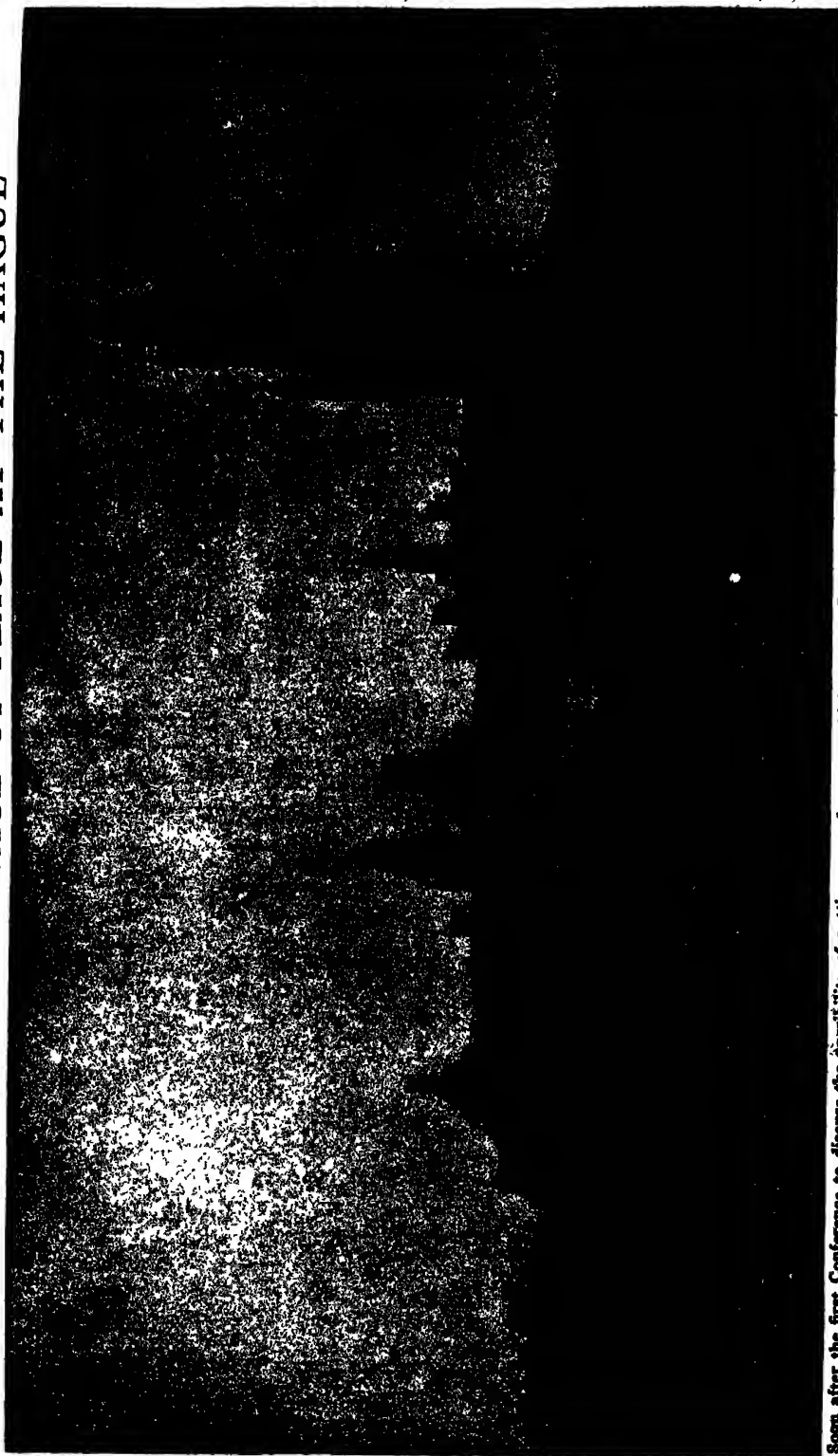


Near St. John's is the quaint little village of Quidi Vidi, where one can see every process in curing and packing fish. Notice the platform upon which the fish are spread to dry, and the towering hills around the little harbor. Every village has its fish platforms, called "flakes." There are few factories to provide work in the towns and the people continue to live in their seaside homes. Some now live on farms.



This is a picture of the rocky, winding entrance to the quaint little harbor of Quidi Vidi, which is shown above. The men have been out for a hard day's fishing along the coast and are now coming back with loaded boats at evening time for a well-earned rest. The picture gives a good idea of the rugged coast of the island dominion, which was the first English colony in the New World.

THE DESERTED PALACE OF PEACE AT THE HAGUE



Soon after the first Conference to discuss the possibility of putting an end to war, which met at The Hague, the capital of the Netherlands, in 1899, Andrew Carnegie announced that he would build a permanent home for the Conference and the Court of Arbitration appointed to sit there. The building was completed at the cost of more than \$1,500,000, but the Court has not had the desired effect. The greatest war in history broke out after the completion of the building.

The Book of POETRY

A GREAT HISTORICAL POEM

ONE of the best known poems of Thomas Gray, the English poet, is "The Bard," which he finished in 1757. The Bard is an old Welsh minstrel who halts Edward I of England, conqueror of Wales (Cambria), to terrify him by foretelling the fate of English kings. After lamenting over fallen Welsh kings and bards (stanzas 2 and 3), the singer predicts the death of Edward II at Berkeley Castle, and the wars with France under Edward III (4); the death of Edward III and his son, the Black Prince (5); Richard II; the Wars of the Roses; the murders in the Tower of Henry VI and the little princes; the fall of Richard III ("the bristled Boar"); the marriage of Henry VII (Lancaster) with Elizabeth of York (6); the glory of England under the Tudors, who were of Welsh descent, especially of Queen Elizabeth's reign, with the poetry of Shakespeare and Milton (7, 8 and 9).

THE BARD

"RUIN seize thee,
ruthless King!

Confusion on thy banners
wait;

Tho' fanned by Conquest's crimson
wing,

They mock the air with idle state.
Helm, nor hauberk's twisted mail,
Nor e'en thy virtues, Tyrant, shall
avail

To save thy secret soul from nightly
fears,
From Cambria's curse, from Cambria's
tears!"

Such were the sounds that o'er the crested
pride

Of the first Edward scattered wild dis-
may,

As down the steep of Snowdon's shaggy
side

He wound with toilsome march his long
array.

Stout Glo'ster stood aghast in speechless
trance:

"To arms!" cried Mortimer, and couched
his quivering lance.

On a rock, whose haughty brow
Frowns o'er cold Conway's foaming flood,
Robed in the sable garb of woe,
With haggard eyes the poet stood;
(Loose his beard, and hoary hair
Streamed, like a meteor, to the troubled
air);

And with a master's hand, and prophet's
fire,

Struck the deep sorrows of his lyre.

"Hark, how each giant-oak, and desert
cave,

Sighs to the torrent's awful voice beneath!
O'er thee, oh King! their hundred arms
they wave,

Revenge on thee in hoarser murmurs
breathe;

Vocal no more, since Cambria's fatal day,
To high-born Hoel's harp, or soft
Llewellyn's lay.

CONTINUED FROM 6089



"Cold is Cadwallo's
tongue,

That hushed the stormy
main:

Brave Urien sleeps upon his craggy
bed:

Mountains, ye mourn in vain
Modred, whose magic song
Made huge Plinlimmon bow his
cloud-topped head.

On dreary Arvon's shore they lie,
Smeared with gore, and ghastly pale:
Far, far aloof th' affrighted ravens sail;
The famished eagle screams, and passes
by.

Dear lost companions of my tuneful art,
Dear as the light that visits these sad
eyes,

Dear as the ruddy drops that warm my
heart,

Ye died amidst your dying country's
cries—

No more I weep. They do not sleep.

On yonder cliffs, a grisly band,

I see them sit, they linger yet,

Avengers of their native land:

With me in dreadful harmony they join,
And weave with bloody hands the tissue
of thy line.

"Weave the warp, and weave the woof,
The winding sheet of Edward's race.

Give ample room, and verge enough

The characters of hell to trace.

Mark the year, and mark the night,

When Severn shall re-echo with affright

The shrieks of death, thro' Berkeley's

roof that ring,

Shrieks of an agonizing king!

She-wolf of France, with unrelenting
fangs,

That tear't the bowels of thy mangled
mate,

From thee be born, who o'er thy coun-
try hangs

The scourge of heaven. What terrors
round him wait!

Amazement in his van, with flight combined,
And sorrow's faded form, and solitude behind.

"Mighty victor, mighty lord!
Low on his funeral couch he lies!
No pitying heart, no eye, afford
A tear to grace his obsequies.
Is the sable warrior fled?
Thy son is gone. He rests among the dead.
The swarm, that in thy noontide beam were
born?

Gone to salute the rising morn.
Fair laughs the morn, and soft the zephyr
blows,

While proudly riding o'er the azure realm
In gallant trim the gilded vessel goes;
Youth on the prow, and Pleasure at the
helm;
Regardless of the sweeping whirlwind's
sway,
That, hushed in grim repose, expects his evening
prey.

"Fill high the sparkling bowl,
The rich repast prepare;
Reft of a crown, he yet may share the
feast:

Close by the regal chair
Fell Thirst and Famine scowl
A baleful smile upon their baffled guest.
Heard ye the din of battle bray,
Lance to lance, and horse to horse?
Long years of havoc urge their destined
course,
And thro' the kindred squadrons mow their
way.

Ye towers of Julius, London's lasting
shame,
With many a foul and midnight murder fed,
Revere his consort's faith, his father's
fame,
And spare the meek usurper's holy head.

Above, below, the rose of snow,
Twined with her blushing foe, we spread:
The bristled boar in infant-gore
Wallows beneath the thorny shade.

Now, brothers, bending o'er the accursed
loom,
Stamp we our vengeance deep, and ratify
his doom.

"Edward, lo! to sudden fate
(Weave we the woof. The thread is spun.)
Half of thy heart we consecrate.

(The web is wove. The work is done.)
Stay, oh stay! nor thus forlorn
Leave me unblest, unpitied, here to mourn;
In yon bright track, that fires the western
skies,

They melt, they vanish from my eyes.
But oh! what solemn scenes on Snowdon's
height

Descending slow their glittering skirts un-
roll?

Visions of glory, spare my aching sight!
Ye unborn ages, crowd not on my soul!
No more our long-lost Arthur we bewail.
All hail, ye genuine kings, Britannia's issue,
hail!

"Girt with many a baron bold
Sublime their starry fronts they rear;
And gorgeous dames, and statesmen old
And bearded majesty, appear.
In the midst a form divine!
Her eye proclaims her of the Briton-line;
Her lion-port, her awe-commanding face,
Attempered sweet to virgin-grace.
What strings symphonious tremble in the air,
What strains of vocal transport round her
play!

Hear from the grave, great Taliessin, hear;
They breathe a soul to animate thy clay.
Bright Rapture calls, and soaring as she
sings,
Waves in the eye of heaven her many-
colored wings.

"The verse adorn again
Fierce war, and faithful love,
And truth severe, by fairy fiction drest.
In buskined measures move
Pale grief, and pleasing pain,
With horror, tyrant of the throbbing breast.

A voice, as of the cherub-choir,
Gales from blooming Eden bear;
And distant warblings lessen on my ear,
That lost in long futurity expire.
Fond impious man, think'st thou yon san-
guine cloud,
Raised by thy breath, has quenched the
orb of day?

To-morrow he repairs the golden flood,
And warms the nations with redoubled
ray.

Enough for me; with joy I see
The different doom our fates assign.
Be thine despair, and sceptred care,
To triumph, and to die, are mine."
He spoke, and headlong from the mountain's
height
Deep in the roaring tide he plunged to end-
less night.

O WERT THOU IN THE CAULD BLAST

There is no poetry in the English language so simple
in the choice of subjects, so natural in expression,
so touching in sentiment, as the poetry of Robert
Burns, "the ploughman of Ayrshire." The field-
mouse, the daisy, the lassie he loves, he sings about
so sweetly that it almost moves to tears. Although
he has written a number of long poems, like "Tam
O'Shanter" and "The Cotter's Saturday Night,"
found on page 4063, it is his lyrics like this little
poem which have endeared him to all hearts.

O, WERT thou in the cauld blast,
On yonder lea, on yonder lea;
My plaidie to the angry airt,
I'd shelter thee, I'd shelter thee;
Or did misfortune's bitter storms
Around thee blow, around thee blow,
Thy bield should be my bosom,
To share it a', to share it a'.

Or were I in the wildest waste,
Sae black and bare, sae black and bare,
The desert were a paradise,
If thou wert there, if thou wert there.
Or were I monarch o' the globe,
Wi' thee to reign, wi' thee to reign,
The brightest jewel in my crown
Wad be my queen, wad be my queen.

THE BELL OF ATRI

Longfellow is pre-eminent among modern poets in his gift of narrative poetry, or the art of telling again in timely verse some old, old story. In the following he gives us, with admirable art and sympathy, an old legend of an Italian town. The story is told so simply that scarcely any detail requires explanation, but it will help the young readers to know that "Giovanni" is the Italian for John, and "Re" for King.

AT Atri, in Abruzzo, a small town
Of ancient Roman date, but scant renown,
One of those little places that have run
Half up the hill, beneath a blazing sun,
And then sat down to rest, as if to say,
"I climb no farther upward, come what may"
The Re Giovanni now unknown to fame,
So many monarchs since have borne the name,
Had a great bell hung in the market-place
Beneath a roof projecting some small space,
By way of shelter from the sun and rain
Then rode he through the streets with all his
train

And, with a blast of trumpets loud and long,
Made proclamation, that whenever wrong
Was done to any man, he should but ring
The great bell in the square, and he the King
Would cause the Syndic to decide thereon
Such was the proclamation of King John

How swift the happy days in Atri sped,
What wrongs were righted need not here be said.
Suffice it that, as all things must decay,
The hempen rope at length was worn away,
Unraveled at the end, and, strand by strand
Loosened and wisted in the ring's hand,
Till one who noted this in passing by,
Mended the rope with braids of briony
So that the leaves and tendrils of the vine
Hung like a votive garland at a shrine



By chance it happened that in Atri dwelt
A knight, with spur on heel and sword in belt,
Who loved to hunt the wild boar in the woods,
Who loved his falcons with their crimson hoods,
Who loved his hounds and horses, and all sports,
And prodigalities of camps and courts;
Loved, or had loved them; for at last, grown
old,
His only passion was the love of gold.



He sold his horses, sold his hawks and hounds,
Rented his vineyards and his garden grounds,
Kept on one steed, his favorite steed of all,
To starve and shiver in a naked stall,
And day by day sat brooding in his chair,
Devising plans how best to hoard and spare.

At length he said: "What is the use or need
To keep at my own cost this lazy steed,
Laying his head off in my stables here,
When rents are low and provender is dear?
Let him go feed upon the public ways;
I want him only for the holidays"
So the old steed was turned into the heat
Of the long, lonely, silent, shadeless street;
And wandered in suburban lanes forlorn,
Barked at by dogs, and torn by briar and thorn.

One afternoon, as in that sultry clime
It is the custom in the summer-time,
With the bolted doors and window-shutters
closed,
The inhabitants of Atri slept or dozed;
When suddenly upon their senses fell
The loud alarm of the accusing bell!
The Syndic started from his deep repose,
Turned on his couch, and listened, and then
rose
And donned his robes, and with reluctant pace
Went panting forth into the market-place.

Where the great bell upon its crossbeam
swung,
Reiterating with persistent tongue,
In half-articulate jargon, the old song:
"Someone hath done a wrong, hath done a
wrong!"

But ere he reached the belfry's light arcade
He saw, he thought, beneath its shade,
No shape of human form of woman born,
But a poor steed, dejected and forlorn,
Who, with uplifted head and eager eye,
Was tugging at the vines of briony.
"Domeneddio!" cried the Syndic straight,
"This is the Knight of Atri's steed of state!
He calls for justice, being sore distressed,
And pleads his cause as loudly as the best."

Meanwhile from street and lane a noisy
crowd
Had rolled together like a summer cloud,
And told the story of the wretched beast
In five-and-twenty different ways at least,
With much gesticulation and appeal
To heathen gods, in their excessive zeal.

The knight was called and questioned; in
reply
Did not confess the fact, did not deny;
Treated the matter as a pleasant jest,
And set at naught the Syndic and the rest,
Maintaining, in an angry undertone,
That he should do what pleased him with
his own.

And thereupon the Syndic gravely read
The proclamation of the King; then said:
"Pride goeth forth on horseback grand and
gay,
But cometh back on foot, and begs its
way;
Fame is the fragrance of heroic deeds,
Of flowers of chivalry and not of weeds!
These are familiar proverbs, but I fear
They never yet have reached your knightly
ear.
What fair renown, what honor, what re-
pute
Can come to you from starving this poor
brute?
He who serves well and speaks not, merits
more
Than they who clamor loudest at the door.
Therefore the law decrees that as this steed
Served you in youth, henceforth you shall
take heed
To comfort his old age, and to provide
Shelter in stall, and food and field beside."

The knight withdrew, abashed; the people all
Led home the steed in triumph to his stall.
The King heard and approved, and laughed
in glee,
And cried aloud: "Right well it pleaseth
me!
Church-bells at best but ring us to the door,
But go not in to Mass; my bell doth more:
It cometh into court and pleads the cause
Of creatures dumb and unknown to the
laws;
And this shall make, in every Christian
clime,
The bell of Atri famous for all time."

THE MILLER OF THE DEE

Charles Mackay's songs always breathe a genial spirit, and this is one of the heartiest. The joy of inward health and gay content is caroled so naturally by the happy miller that he is envied by a passing king. Notice how well a story may be told in easy words. Out of six verses in these verses 177 are of one syllable, and only one—"nobody"—has three.

THERE dwelt a miller hale and bold
Beside the River Dee;
He wrought and sang from morn to night,
No lark more blithe than he;
And this the burden of his song
For ever used to be—
"I envy nobody, no, not I,
And nobody envies me!"

"Thou'rt wrong, my friend!" said old King
Hal,
"Thou'rt wrong as wrong can be;
For could my heart be light as thine
I'd gladly change with thee.
And tell me now what makes thee sing
With voice so loud and free,
While I am sad, though I'm the king,
Beside the River Dee?"

The miller smiled and doffed his cap:
"I earn my bread," quoth he;
"I love my wife, I love my friends,
I love my children three;
I owe no penny I cannot pay;
I thank the River Dee,
That turns the mill and grinds the corn,
To feed my babes and me."

"Good friend!" said Hal, and sighed the
while,
"Farewell, and happy be;
But say no more, if thou'dst be true,
That no one envies thee.
Thy mealy cap is worth my crown,
Thy mill my kingdom's fee!
Such men as thou are England's boast,
O miller of the Dee!"

I SAW A NEW WORLD

In this poem, W. B. Rands shows what a mess might be made of the world if it were to be fixed without change, and how interesting it is with all its surprises and strife and hope and dreams.

I SAW a new world in my dream,
Where all the folks alike did seem;
There was no Child, there was no Mother,—
There was no Change, there was no Other.

For everything was Same, the Same;
There was no Praise, there was no Blame;
There was neither Need nor Help for it;
There was nothing fitting, or unfit.

Nobody laughed, nobody wept;
None grew weary, so none slept;
There was nobody born, and nobody wed;
This world was a world of the living dead.

I longed to hear the Time-Clock strike
In the world where the people were all alike;
I hated Same, I hated Forever,
I longed to say Neither, or even Never.

I longed to mend, I longed to make,
I longed to give, I longed to take,
I longed for a change, whatever came after,
I longed for crying, I longed for laughter.

THE WILD ROSE

The following is one of the most widely known of Goethe's lyrics. The encounter between the selfish boy and the delicate rose, who has only her thorns to protect her, is delightfully portrayed. Franz Schubert composed the music for this pretty lyric.

A BOY espied, in morning light,
A little rosebud blowing;
'Twas so delicate and bright
That he came to feast his sight,
And wonder at its growing.
Rosebud, rosebud, rosebud red,
Rosebud brightly blooming.

"I will gather thee,"—he cried,—
"Rosebud brightly glowing!"
"Then I'll sting thee," it replied,
"And you'll quickly start aside
With the prickle glowing."
Rosebud, rosebud, rosebud red,
Rosebud brightly blooming.

But he plucked it from the plain,
The rosebud brightly blowing!
It turned and stung him, but in vain—
He regarded not the pain,
Homeward with it going.
Rosebud, rosebud, rosebud red,
Rosebud brightly blooming.

THE MOSS ROSE

This little poem is by Krummacker, who is classed with William Cullen Bryant as a nature poet. He is especially noted for his poems about the Alps.

THE Angel of the flowers, one day,
Beneath a rose tree sleeping lay,—
That spirit to whose charge 'tis given
To bathe young buds in dew of heaven.
Awakening from his light repose,
The Angel whispered to the rose:
"O fondest object of my care,
Still fairest found, where all are fair,
For the sweet shade thou giv'st to me
Ask what thou wilt, 'tis granted thee."
"Then," said the rose with deepened glow,
"On me another grace bestow."
The spirit paused in silent thought,—
What grace was there that flower had not?
'Twas but a moment, o'er the rose
A veil of moss the Angel throws,
And, robed in nature's simplest weed,
Could there a flower that rose excel!

THE PRETTY FISHER MAIDEN

Heinrich Heine wrote this song, for which Franz Schubert wrote the music. It is one of the best known German lyrics which have made him popular.

COME, fairest fisher maiden, here
Put, put thy skiff to land;
Come close to me and sit thee down,
And prattle hand in hand.

Oh, lay thy head upon my heart,
Have not such fear of me,
Thou trustest day by day thyself
Unto the wild, wild sea.

My heart is like the sea, it hath
Its storm, and ebb and flow;
And many pretty pearls, my love,
Rest in its depth below.

WHITHER?

Wilhelm Müller, just as Heine, implies that all water is inhabited by some fairy or water nymph. It is a fanciful idea to suggest that instead of the noise caused by the water flowing over the rocks and pebbles, the nymphs are singing their alluring songs.

I HEARD a brooklet gushing
From its rocky fountain near,
Down into the valley rushing,
So fresh and wondrous clear.

I know not what came o'er me,
Nor who the counsel gave;
But I must hasten downward,
All with my pilgrim stave;

Downward and ever farther
And ever the brook beside,
And ever fresher murmured
And ever clearer the tide.

Is this the way I was going?
Whither, O brooklet, say!
Thou hast, with thy soft murmur,
Murmured my senses away.

What do I say of a murmur?
That can no murmur be;
'Tis the water-nymphs, that are singing
Their roundelays unto me.

Let them sing, my friend, let them murmur,
And wander merrily near;
The wheels of a mill are going
In every brooklet clear.

TO MY SISTER

"To My Sister" was written by Heine, when, as a middle-aged man, he visited the house in which he was born. This is a splendid example of the poet's delightful simplicity of style. Heinrich Heine, as many other poets, vividly recalls his childhood days.

MY child, when we were children,
Two children small and gay,
Who would creep into the hen-house,
And hide us in the hay,

We cackled like the young cockerels
And to everybody going,
"Cock-a-doodle-doo!"—we cried;
And they thought the cocks were crowing.

We spread old bits of carpet
On some chests within the court;
And there we lived together
In a house of the finest sort.

An old cat of our neighbors
Often came to make a call;
We made her bows and courtesies
And compliments and all.

We made very kind inquiries
About the health of our old friend;
Since then we have had to put the same
To old cats without end.

We used to sit conversing
In a solemn, elderly way,
Complaining, how much better
Things had been in our day;

How Love, Truth, and Religion
One hardly ever met;
How coffee had grown very dear
And money hard to get.

They all are gone—the little games
We played at in our youth,
And money, and the good old times
And Religion, Love and Truth.

THE CASTLE BY THE SEA

This poem is by Uhland, and at the time in which he lived Germany was divided into many small principalities. These were constantly at war with one another. The castle so beautifully described is Germany trying to stand against the tyranny of the government. The daughter is Freedom, who no longer lives with her parents in the lordly castle by the sea.

HAST thou seen that lordly castle,
That castle by the sea!
Golden and red above it
The clouds float gorgeously.

And fain it would stoop downward
To the mirrored waves below;
And fain it would soar upward
In the evening's crimson glow.

Well have I seen that castle,
That castle by the sea,
And the moon above it standing,
And the mist rise solemnly.

The winds and waves of ocean,
Had they a merry chime?
Didst thou hear, from those lofty chambers
The harp and the minstrels rhyme?

The winds and the waves of ocean,
They rested quietly;
But I heard on the gale a sound of wail,
And tears came to mine eyes.

And sawest thou on the turrets
The King and his royal bride,
And the wave of their crimson mantles,
And the golden crown of pride?

Led they not forth in rapture
A beauteous maiden there,
Resplendent as the morning sun,
Beaming with golden hair?

Well, I saw the ancient parents,
Without the crown of pride.
They were moving slow in weeds of woe,
No maiden was by their side.

REST

These thoughts in verse are from the great German poet Goethe—the greatest of all German poets and writers, and one of the giants of European literature. He lived between 1749 and 1832. These six lines are worth careful study as an instance of compression of thought. Nine thoughts are expressed in less than fifty words in this fine little poem.

REST is not quitting the busy career;
Rest is the fitting of self to one's sphere.

'Tis the brook's motion clear without strife;
Fleeting to ocean after its life.

'Tis loving and serving the highest and best;
'Tis onward, unswerving, and this is true rest.

THE ERL KING

Goethe tells the story of a father bringing home his sick child, who, in his delirium, believes that the branches of the trees are the Erl king and his daughters trying to seize him. The Erl king, according to German legends, is the spirit which dwells in the willow tree. The poem has been set to music by Franz Schubert as well as many other lyrics.

WHO rides there so late through the
night—dark and drear?

The father it is, with his infant so dear,
He holdeth the boy tightly clasped in his arm.

He holdeth him safely, he keepeth him warm.

"My son, wherefore seek'st thou thy face
thus to hide?"

"Look, father, the Erl king is close to our
side!

Dost thou see not the Erl king with crown
and with train?"

"My son, 'tis the mist rising over the plain."

"Oh, come, thou dear infant—oh, come thou
with me!

Full many a game, I will play there with
thee;

On my strand, lovely flowers their blossoms
unfold.

My mother shall grace thee with garments
of gold."

"My father, my father, and dost thou not
hear

The words that the Erl king now breathes
in mine ear?"

"Be calm, dearest child, 'tis thy fancy de-
ceives;

'Tis the sad wind that sighs through the
withering leaves."

"Wilt go then, dear infant, wilt go with
me there?

My daughters shall tend thee with sisterly
care,

My daughters by night their glad festival
keep,

They'll dance thee, and rock thee and sing
thee to sleep."

"My father, my father, and dost thou not
see,

How the Erl king, his daughters has 'brought
here for me?"

"My darling, my darling, I see it aright,
'Tis the aged gray willows deceiving thy
sight."

"I love thee, I'm charm'd by thy beauty,
dear boy!

And if thou'rt unwilling, then force I'll em-
ploy."

"My father, my father, he seizes me fast.
Full sorely the Erl king has hurt me at last."

The father now gallops, with terror, half
wild,

He grasps in his arms the poor shuddering
child,

He reaches his courtyard with toil and with
dread,

The child in his arms finds he motionless,
dead.

LITTLE VERSES FOR VERY LITTLE PEOPLE

RHYMES AND JINGLES AND THEIR USE

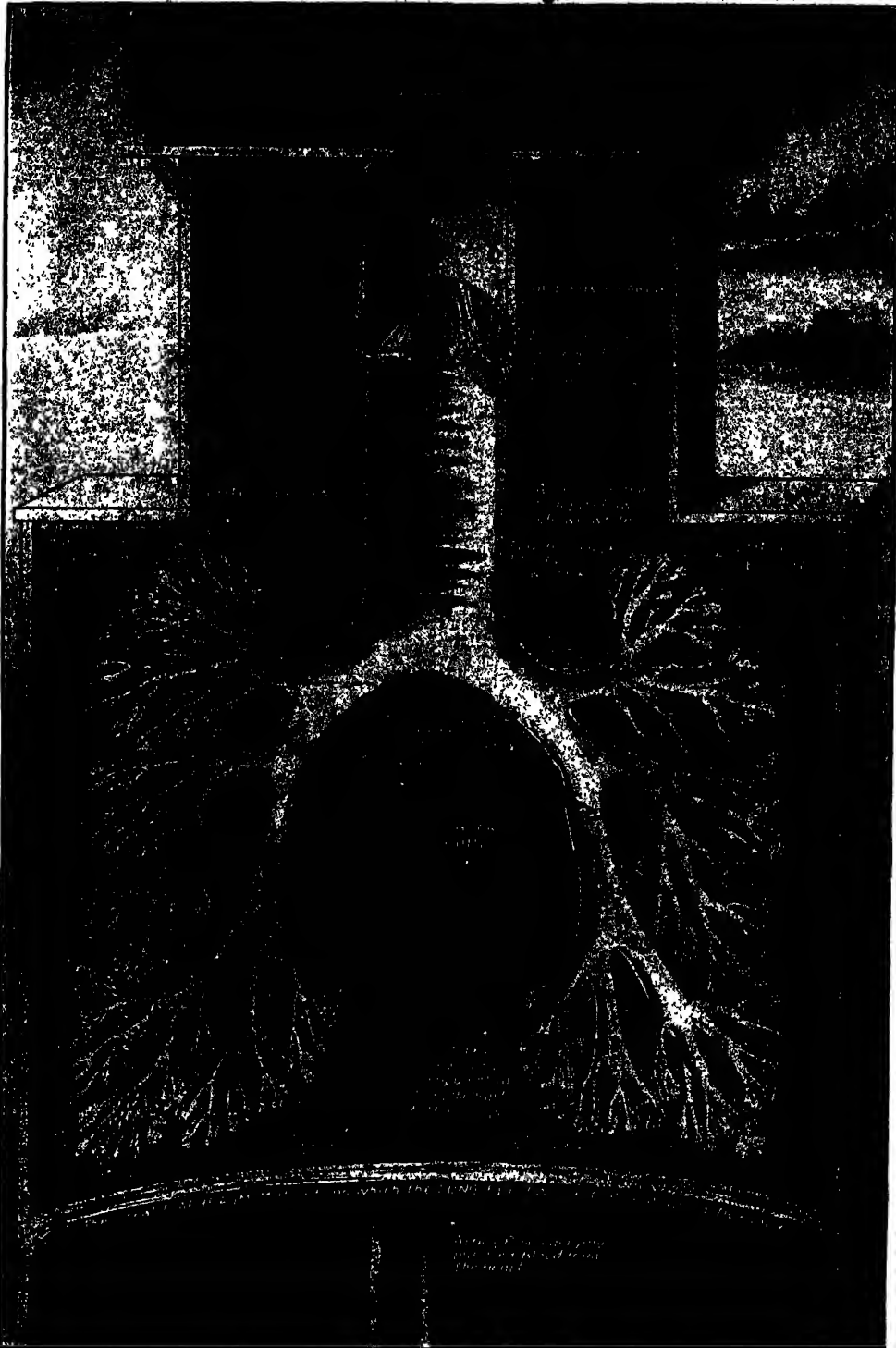
WHAT is the use of Nursery Rhymes? Did any boy or girl ever ask that? Perhaps not; but it is worth asking. The answer is very simple. Just as we all like stories, so do most of us like poems, which are stories told in words that sound pleasant in our ears, and are easy to remember. But before we can learn poems we learn little verses about funny little folk, and these are called nursery rhymes, because all mothers say them to their children, and the sounds of the words are easy to bear in mind. In this part of our book we have given all the best-known nursery rhymes, many of them having clever pictures with them.

RIDE A COCK-HORSE TO BANBURY CROSS



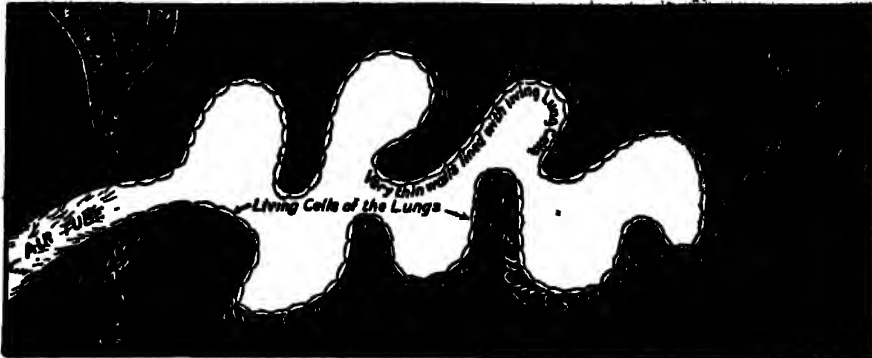
Ride a cock-horse to Banbury Cross,
To see a fine lady upon a white horse;
Rings on her fingers, and bells on her toes,
She will have music wherever she goes.

THE VENTILATION OF JACK'S HOUSE



Air goes in the front door, down the voice-box and wind-pipe, and into the lungs, which are much like sponges, with thousands of hollow spaces lined with living cells. These cells lie between the air and the blood in the hollow spaces, and purify the blood by taking oxygen from the air and sending it into the blood, and by driving the carbon dioxide and water from the blood into the air, to be breathed out again.

The Book of OUR OWN LIFE



One of the tiny air-chambers in the lungs, magnified to show how its walls have air on one side and blood on the other. Little muscles expand and contract the air-chamber alternately.

THE WONDERFUL RIVER OF AIR AND THE WAY IN WHICH IT KEEPS JACK'S BLOOD PURE

EXCEPT in special need, when Jack is compelled to ventilate his house through his front door, all the air he uses must pass through a complicated filter, warmer, and moistener, which we call his nose. Suppose we have reached the back of his nose, and find a supply of very nearly pure, moist, warm, almost dustless air.

There is some distance yet to go before the air reaches Jack's bellows, or lungs. First it comes to the opening of his great windpipe, which runs down the front of his neck. This pipe must always be kept open, of course, and so it is stiffened with little rings of gristle, or cartilage.

We can readily feel these in our own windpipe just before it leaves the neck and plunges into our middle story. But above the rings there is something much larger, and this is Jack's voice-box, or speaking-machine, of which the proper name is the larynx. Now, before the air which has passed through Jack's filter can reach the windpipe, it must pass through the voice-box.

There is a little risk here, nevertheless. Jack's larynx is, so to say, a new idea, and has had to be contrived

CONTINUED FROM 6234



as an addition to Jack's house. So far as the inlet of air goes, his voice-box is simply a difficulty. It does no good, and it makes no use of the air which goes in—only of the air which comes out.

There are two difficulties, really. First, the air-current and the food-current cross each other's paths—which does not seem to us to be the best arrangement. Jack's wind-pipe lies in front of his gullet, and every morsel of food and every drop of fluid that enters his gullet has to jump over the opening of his voice-box.

To help this business, his voice-box is provided with a movable lid, attached to the back of his tongue, and when he swallows this lid partly closes over the opening to the voice-box, and partly diverts the current of food to one side, so that nothing goes the wrong way. But, of course, while Jack is breathing, his voice-box must be freely open, and therefore it is quite certain that, whatever happens, he must not try to breathe and swallow at the same time; but sometimes he may laugh—which requires a good in-breath—when he is swallowing, and then he is likely to choke. A choking fit may be unpleasant, but at the same

time it is very interesting. Of course, whatever happens, Jack's ventilation must go on, and therefore his ventilation shaft must be kept clear. When he chokes something has got into the ventilation shaft, and immediately the whole body gives up all other interests and occupations and sets itself to expel the obstruction at once.

For this purpose Jack's house is provided with a large number of powerful servants, or muscles, which can all contract the cavity of his chest. No sooner does the ventilation system come to hold an intruder than the sentinels in its walls send up a message to one of the lower telephone exchanges—not to Jack himself—and the order goes forth to cough and cough and cough again. A cough means that we have contracted some of the muscles so as to force air out of the chest quite violently, and thus the obstruction is blown away. Cells inside the windpipe set to work to produce a smooth fluid, so as to make the passage of the intruder easy; and the body will devote itself with such force to this important task that Jack's eyes may fill with tears.

THE NARROW WAY THROUGH WHICH THE AIR MUST PASS

When the air, apart from such accidents, has passed into the voice-box, it comes at once to a narrow chink, and through this it has to pass. Such a chink would never exist in such a place, were it not for a very peculiar purpose.

The edges of this chink are made of elastic fibres, and they are there placed so as to make sounds when Jack's air strikes against them in coming out. So we shall return to them, but meanwhile we only note that these vocal cords, as they are called, which line the chink, are so placed that they can be swung apart whenever Jack takes a breath. And that is what happens. Before every breath that Jack takes, from the cradle to the grave, the unsleeping brain-cells give orders to the muscles which stand beside his vocal cords, and then the muscles swing the cords apart, so that the air can enter.

Sometimes certain abominable burglars, called the microbes of diphtheria, get into Jack's throat and produce a thick white stuff which may cover over this chink, and then Jack is in danger of death. But nowadays men call in

horses to save Jack in such a case. Tiny doses of what the microbes make are given to horses, and the cell-chemists of the horses make something which will dissolve this dangerous stuff. The medicine the horses make is called the diphtheria anti-toxin, and it saves the lives of thousands of children and numbers of grown people all the world over every year.

THE HUNDREDS OF TUBES WHICH CARRY THE AIR TO THE LUNGS

Now when the passage to the chest is closed, the air has a clear passage down the windpipe until the windpipe splits into two, one going to the right and the other to the left. One branch supplies the right lung and the other supplies the left lung. These branches divide over and over again, like a tree, until at last the air is led, by hundreds of little tubes, to the very stuff of the lungs themselves.

The lungs are certainly a pair of bellows, but we find that they consist of a kind of sponge of thousands of tiny hollow spaces, into which the air enters. These little spaces are lined by the living cells of the lungs, and on the other side of this lining of cells is a tremendous number of tiny blood-vessels which carry blood from Jack's heart. So what we find in the stuff or tissue of the lungs is air on one side, blood on the other, and a layer of living lung-cells in between.

THE LITTLE VISITORS TO THE LUNGS AND WHY THEY COME

This blood is not bright blood, but dark blood. It has been sent to the lungs from the right side of Jack's great pump, to which it had just been returned after traveling all through his body. This blood contains a quantity of carbon dioxide, a poison, which it has brought to the lungs from Jack's body, and it also contains more water than it needs. On the other hand, the countless millions of red cells which it contains, the air-ports of Jack's house, are empty-handed. They have no oxygen, for what they got when they were last in the lungs they have given away to Jack's body, and now they have come back to get more from the fresh air that Jack has just breathed in.

What happens, then, is quite simple. Through the thin layer of lung-cells there passes a double stream of gases—a stream from the air to the blood, and a stream from the blood to the air. The

lung-cells supervise and direct them both. The carbon dioxide and the unnecessary water pass into the air—we can see the water when we breathe out on to a window-pane—and the oxygen of the air passes into the blood. In order to make these two exchanges Jack has a ventilation system, and that is what we are all doing day and night without ceasing, as we breathe. We are getting oxygen into our blood, and carbon dioxide and water out of it.

THE LITTLE RED PORTERS WHO PACK AWAY THE OXYGEN

The oxygen in the air is at once picked up by the red porters who are in the blood for the purpose, and who can pack away a most extraordinary quantity of it. Of course, a little oxygen can be dissolved in blood just as it can in water, but Jack's house could never do with the little amount which his blood itself would dissolve. The red porters make all the difference. Each of them can squeeze together and pack on his shoulders, so to say, an astonishing quantity of oxygen for his size.

The blood, with its air-laden porters, after leaving the lungs, returns to the left side of Jack's great pump, and is at once driven onward to supply every part of his body with oxygen. All the red cells leave the pump in one great channel, but it soon divides, and one cell may find itself traveling through one of Jack's toes, while another may be rushing through his eye-sentinels. No part of Jack's house is forgotten.

THE GIVING OUT OF THE FRESH AIR TO ALL PARTS OF JACK'S HOUSE

In every case the walls of the blood-tubes soon become thinner and thinner. And now we can see happen exactly what happened a little while before in the lungs, except that the process is reversed. In the lungs the red porters got oxygen; now they give it. It is for this that they exist. Most of the cells of Jack's body are far away from the air, and if they are to live air must be brought to them. That is what the bellows and the pump and the red porters exist for. Each little porter hands over to the gasping cells of Jack's toes or eyes or liver or muscles the air that they want; and then the red cells, not quite so red as they were, hasten back to the pump.

But we must not forget the carbon

dioxide and water. The cells want oxygen for burning. They want to get the power and the warmth, and the fuel they burn is mostly carbon—very like our coal—and hydrogen. When carbon is burned with oxygen we get carbon dioxide, and when hydrogen is burned with oxygen we get water. The cells of Jack's house are always producing carbon dioxide and water, and so the blood which leaves Jack's toe or eye is poorer in oxygen but fuller of water and carbon dioxide, and while its empty-handed red cells scurry back to the lungs for more oxygen, it also carries these waste matters, one of which is a rank poison, to the lungs. As soon as they reach the lungs they are breathed out on the air, and this is why the air of a room in which there are a number of people must be constantly changed. If, for instance, a schoolroom is not well ventilated the air which the children breathe will soon have too little oxygen, and they will begin to do poor work.

THE OVERSEERS WHO LOOK AFTER JACK'S BREATHING

We may now consider the air which has got into the lungs, and how it gets out again. It is by no means the same air, and is also warmer than when it entered, for it has been for a little while quite close to Jack's warm blood.

The air returns by the same route all the way until it reaches the filter, where it takes a slightly different course. On the way, of course, it has to pass through the chink again, but as a rule it does so without difficulty or sound—though not so, of course, when Jack desires to speak or sing.

For us now one more question remains: What drives the air in when we breathe in, and what drives it out when we breathe out? If we notice ourselves we shall agree, assuming that we are quite well, that it is the breathing-in that costs us effort; the breathing-out seems to do itself, and that is quite true. Breathing-in, or inspiration, is like stretching a piece of elastic, and breathing-out, or expiration, is like letting it go again.

Every inspiration is done by certain of Jack's muscles, which exist for the purpose, and are all under the command of a special group of overseers in the lowest part of his brain. These give their orders for an inspiration about

sixteen or eighteen times a minute, but faster or slower according to circumstances. In fever, or if Jack is running hard, and so using up a lot of oxygen, he breathes much more rapidly. On the other hand, if Jack gives orders himself, on purpose, from his own study, and quickly takes a number of extra long breaths, he will find that for a little while afterwards he scarcely takes any breaths at all. He has no need to do so, for the blood and the tissues have been filled with oxygen by the air from the deep breaths that he has just taken. Deep breathing is very important. By doing this we can push the stagnant air out of the lungs. Our lungs are larger than are needed for everyday use. If this were not true, we should be unable to make any unusual exertion.

It has been proved that the overseers in Jack's brain judge by the quantity of carbon dioxide in the blood which passes through them. If it rises a little, then they hasten to deepen Jack's inspirations until its quantity falls. Their business is to keep the quantity of carbon dioxide in Jack's blood below danger point, and to this end they watch and direct, without a pause, from the first breath that he draws in his life to his last before its end.

WHAT HAPPENS IN THE CHEST WHEN WE BREATHE

The chief of the muscles through which they act is the great sheet of muscle stretched between Jack's middle story and his lower story. It is called the diaphragm, and when it gets orders to contract it flattens itself so as to make much more room in Jack's chest, or middle story. Jack could not live very long if his diaphragm stopped working, and it is helped by a large number of other muscles between his ribs. These and various other muscles all have the same action as the diaphragm—when they contract they draw the ribs outward and make the cavity of his chest much larger.

That happens when we work a pair of bellows, and the result is exactly the same. The chest is a pair of bellows, and when it is expanded air from outside rushes in. The air outside has a pressure called the "atmospheric pressure," and directly we create a vacuum, or empty space, in the lungs, no matter how small it is, the atmospheric pressure drives the

air in to fill it. Some creatures force the air in by a force-pump action, just as Jack's pump forces his blood along; but we breathe by a suction-pump arrangement.

THE MILLIONS OF ELASTIC FIBRES WHICH STRETCH WHEN WE BREATHE

When the air has entered, and the chest is deepened and widened, its walls are all in a state of being stretched. The ribs are a little twisted, and the muscles are ready to return to their former shape. Further, the lungs themselves contain an enormous quantity of yellow elastic fibres, coiled up in millions and millions all through the lung substance or tissue, and when the lungs are stretched by the air, all these elastic fibres are stretched too, and ready to relax again. So, the instant the muscles of inspiration cease to pull, all these elastic things relax like a rubber that has been stretched, the chest comes back to its old size, the air is squeezed out, and that is how expiration happens. Of course, we can make "forced expirations" when we deliberately use muscles to contract the chest. We do so when we cough, or speak, or sing, or sneeze; but ordinary expiration uses no muscles at all.

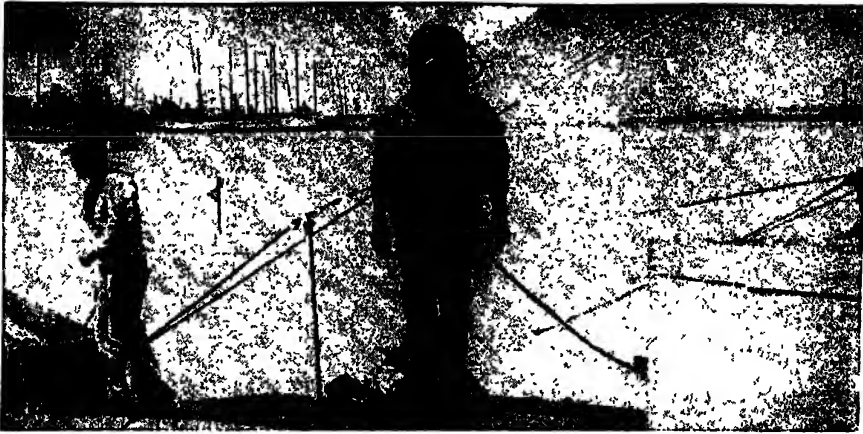
Sometimes, when people are old, or take too little exercise, they lose the proper elasticity of muscles, ribs, and lungs, the lungs are never properly emptied, but remain over-stretched all the time; and all sorts of disasters follow.

HOW JILL SOMETIMES FAILS TO COPY JACK'S GOOD EXAMPLE

Breathing is so important that it is one of the things we all do quite naturally without being taught. Only sometimes we adopt foolish habits which interfere with it. Jack is not so bad an offender as Jill in this respect, for she sometimes packs her chest into clothes which prevent her diaphragm from moving and her lungs from filling properly. Nature meant every part of Jack's house to have free play for action, and if she had thought Jack would be better with a strait-jacket she would have made him one. If there is one part of his body more than another which should be perfectly free to move as it will, by day and night, it is the chest or thorax, which provides his every living cell with the air it breathes, and without which he cannot live.

CONTINUED ON PAGE 6353.

The Book of FAMILIAR THINGS



A life-saving dress in which submarine sailors can float to the surface.

DOWN IN THE DEEP, DEEP SEA

IN the caverns deep
of the ocean
cold,
The diver is seeking
a treasure of gold

CONTINUED FROM 6271

The bottom of the sea is rich in a harvest of sunken vessels and cargoes, and how can a diver seek this treasure? It is because he wears a sort of armor, which keeps out the water and brings him air from above. By the help of this armor he can also do much valuable work in constructing and repairing foundations under water.

The diver's suit of rubber covers his body from feet to neck, but leaves his hands free, as his sleeves end in water-tight cuffs at the wrist. He puts on a heavy helmet made of tinned copper, which fastens to the neck of his suit. There are three windows in this headpiece, of half-inch glass, secured in brass frames, and in addition to these there may be a window in the top of the helmet. There is a valve attached to a pipe, through which comes the air pumped from above. This valve is what is called a non-return and is very important, for if the air pipe is broken, the valve closes and gives a short time for the diver to realize his danger and act for safety. A second valve in the helmet lets out the air which has been

breathed. Electric lamps and telephones are provided, so that not only has the diver the means of seeing around him, but he can communicate with those above him regarding his operations, and be communicated with. In order that he may sink down into the water, he wears extra weights of lead secured by hooks at the neck.

A recent invention provides him with what is called a ground block. This is a stand or anchor with steps cut in the side upon which he may ride down and up in comfort. Its purpose is to relieve the diver of the weight of his cable, which is attached to the block. When he reaches the bottom he can set up his anchor and fix his cable on a pulley so that he then only has to drag about with him the part between himself and the reel.

The deepest that a man has ever been known to dive is 306 feet, but men seldom go down more than 100 feet. The deeper down we go, the greater is the pressure of the air. A man who goes down sixty feet has to breathe air at twice the pressure of the ordinary atmosphere. The result is that the air taken into the blood is forced by the pressure into froth and bubbles, and some of the tissues of

the body give off this air very slowly, so that if a man comes up suddenly, many of these bubbles remain in his blood. This may cause paralysis or death. To guard against this, a man must take a long time in coming up out of the water, resting at different depths, so that the bubbles may disappear. A time table for divers has been made so that they may know how to descend, and work and come up again with the greatest safety.

LIGHTENING THE DIVER'S LOAD

The diver often has to do heavy work in attaching cables and otherwise helping to recover wrecks and cargoes. He needs hammers, drills, scrapers and cutters. He needs some way of carrying these to the bottom of the sea, and of storing them while at work. For this a clever inventor has made a submarine air-room, which can be lowered to the sea bottom from the surface, with which it is connected by air-hose. It carries telephone cables and serves as the diver's base, instead of the ship. There he can keep his tools, and there he can retreat for safety from rapid currents or if anything goes wrong with his suit or connections. His own line runs horizontally from it, instead of vertically from the ship above, and is thus less liable to accident from currents. So many ships with valuable cargoes were sunk during the Great War that divers will be busy for many years seeking to recover the treasures.

HOW A DIVER CAN BE INDEPENDENT OF THE AIR-HOSE

Divers are carried by every man-of-war. If anything happens to the ship below the water-line, the men put on their dress, go down with tools, and repair the damage. One kind of diving suit has attached a cylinder of compressed air, and with this the diver is not encumbered with air-hose and cannot be suffocated by a kink in it caused by a current. To make his supply hold out for a long period of time he has an air purification circuit similar to the one described below.

Another invention, for submarine vessels, is a strong helmet and a water-tight jacket. In the jacket pocket is a substance called caustic soda or potash, which, on coming in contact with the sailor's warm breath, gives off oxygen, and so acts that the poisonous carbon

dioxide from the man's breath is absorbed. By this means, the air inside the helmet and jacket can be breathed again and again. The submarine sailor, in case of accident, puts on this dress and floats to the surface, when the dress acts as a life-buoy, keeping its wearer afloat until he can be rescued.

A BRAVE DIVER WHO BEAT THE WORLD'S RECORD IN DIVING

In March, 1915, the submarine F 4, belonging to the United States Navy and carrying a crew of twenty-one men, disappeared in deep water off Honolulu. Divers at once went to the scene of the accident to locate the sunken boat, and thirteen descents were made, every one of which broke a world's record for deep sea diving. Five were made to a depth of 306 feet, and eight to 275 feet. The former world's record was 274 feet. And for the first time in the history of diving, a telephone device was used successfully in communicating with the men under water. At last the submarine was found—288 feet below the surface—with a hole in her side. The diver who discovered her was under water for two hours, five minutes for the descent, twelve minutes on the bottom and one hour and forty-five minutes in coming up.

It was decided to raise the submarine to the surface by attaching cables to her hull and gradually drawing her into shallower water, whence she could be raised. Every day, when the currents allowed, divers were busy fastening these cables. Again and again they had to be renewed, for the rapid currents parted them. One morning, after the work had been going on for about a fortnight, a diver went down and successfully accomplished his task. As he was being brought to the surface he became entangled in one of the lines attached to the underneath craft. He signaled to the ship above and another diver, Frank Crilley, who had already made a record, went down to his rescue. Both men worked strenuously to disengage the line to the submarine from the air tube and the line attached to Loughman's apparatus. After heroic efforts, lasting for four hours, the signal came for the final raising to the surface. With what a will those aboard the ship obeyed! Crilley came up first, and then Loughman, exhausted but otherwise unharmed.

THE NEXT STORY OF FAMILIAR THINGS IS ON PAGE 6357.

THE DIVER PREPARES TO GO DOWN



The diver's dress is the result of centuries of experiment, and enables a man to keep under water for five or six hours at a time. The dress consists of a waterproof garment, heavily weighted, massive, heavy boots with leaden soles, and a metal helmet. Here the divers are beginning to put on their costume.

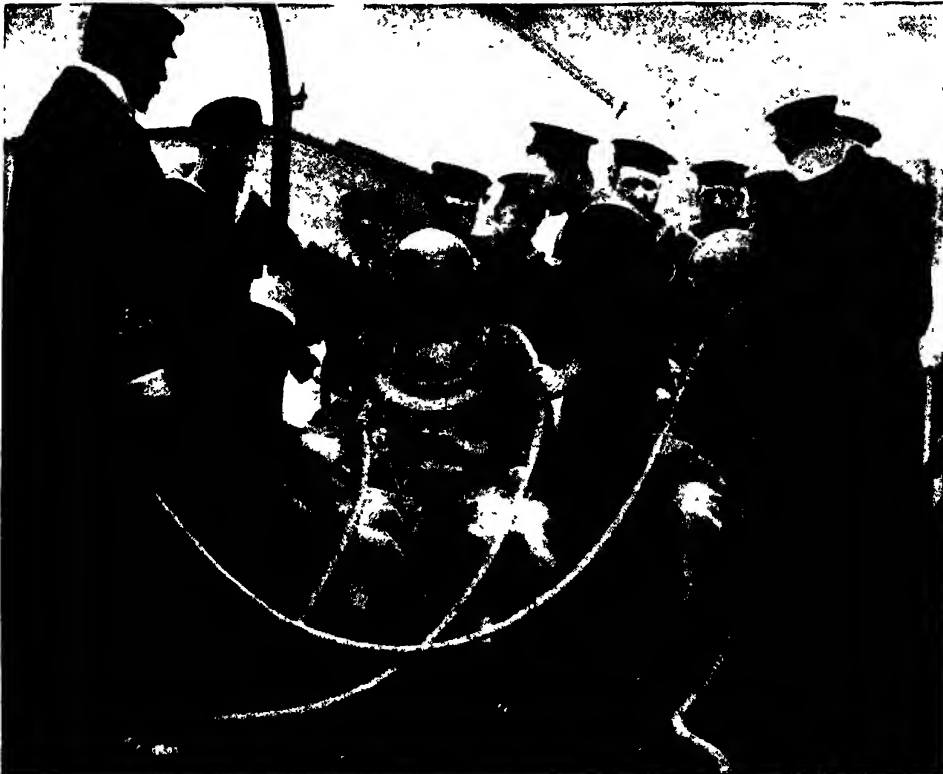


After the diver has put on ordinary clothing, he is helped into a waterproof garment, which covers his whole body, except head and hands. He needs warm clothing, as it is cold working under water.



In this picture the diver has on the waterproof garment and the heavy boots. The rope by which he will be lowered is already round his waist, and he is about to have the helmet put on his head.

TALKING TO A MAN DOWN IN THE SEA



These pictures show a diver going down into the sea, and a man talking to him by telephone. The diver's helmet has three glass windows, and is fitted with valves, so the air he has breathed can escape. Fresh air is supplied through a tube that connects the helmet with an air-pump worked from above.



The diver's costume weighs about 150 pounds, but so buoyant is the water that he has to put his feet under the ladder rungs to pull himself down.



Communication is kept up by means of the telephone. One sailor is here seen speaking to the diver while the other is working the air-pump.

THE MEN ABOVE AND THE MAN BELOW



In this picture the diver is working under the sea, while in the ship above one man holds the rope by which he is raised, another has charge of the air-tube, and a third is telephoning to the diver. The greatest depth to which a diver has been known to descend is 306 feet, but divers can rarely work farther down than 100 feet. A complete diving costume, with all the necessary apparatus, costs several hundred dollars, but this is cheap, when we take into account the valuable work the diver does.

The photographs on these pages are by Stephen Cribb, and others.

THE DIVER COMES BACK TO THE BOAT

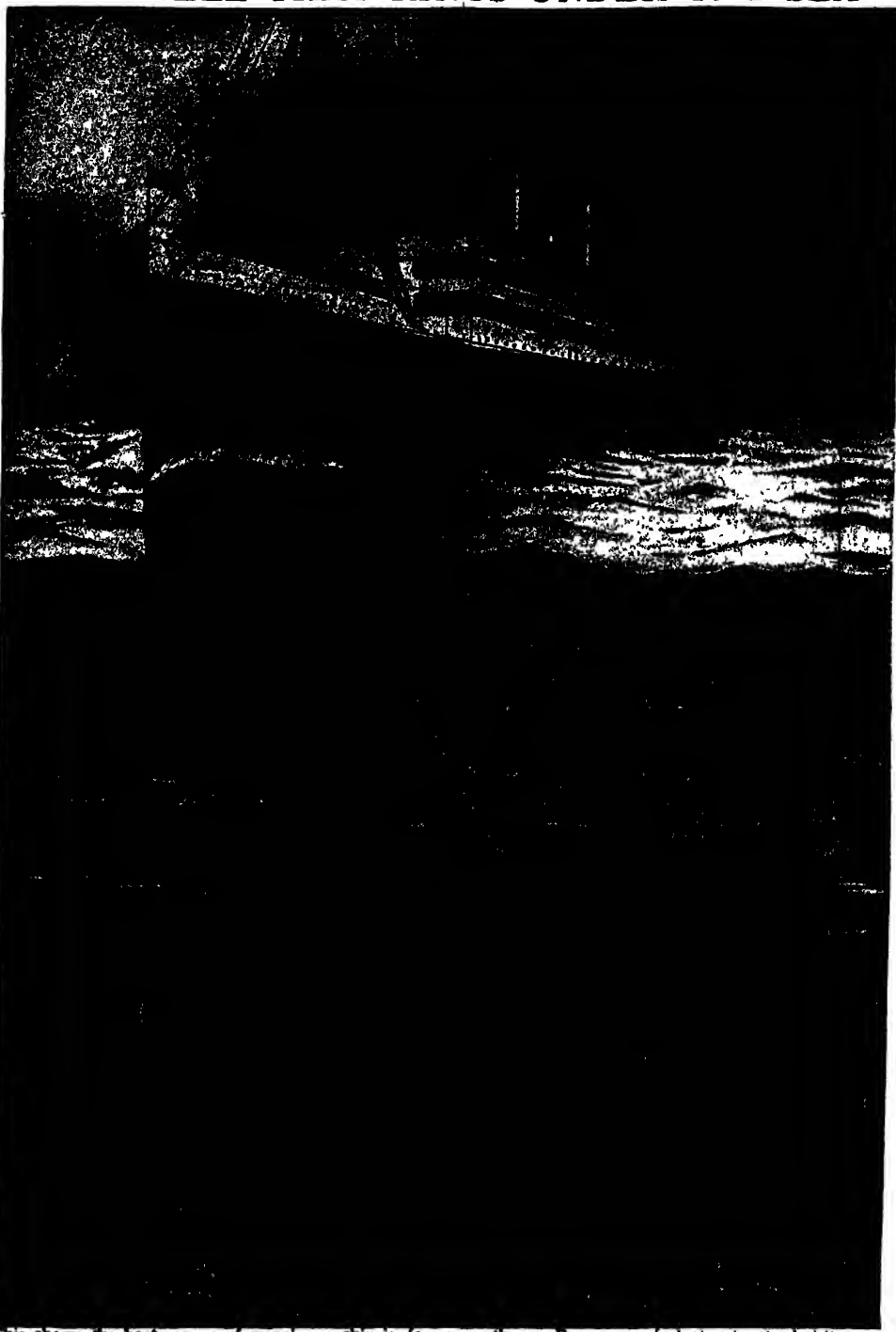


On this page we see how a diver works from a small boat. There is no telephone, and the diver communicates with those above by signaling with a rope. He can get to the place where he wishes to work either by descending a ladder that hangs over the side of the boat, or by being let down by a rope.



The diver is pulled to the surface by the rope round his body. The invention of diving apparatus has led to the recovery of a vast amount of treasure. From one ship alone that foundered in sixty feet of water, nearly \$1,000,000 was recovered by the brave divers. In the latest kind of diving-dress the diver carries a cylinder of compressed air on his back, and is independent of help from above.

THE BELL THAT RINGS UNDER THE SEA



This shows the best means of warning a ship in foggy weather. By means of electricity, the lighthouse-keeper rings a bell under the sea. The ship has inside its hull on each side a microphone, which collects the sound of the bell as it passes through the water in the direction of the dotted line, and magnifies it. A wire connects each microphone with a telephone receiver in the wheel-house, and by turning his ship until he hears the bell equally loudly from each side, the captain is able to point his ship towards the bell. His chart marks the position of the bell, and he is thus able to know exactly where he is.

MAN'S BEST FRIEND AMID ETERNAL SNOWS



St. Bernard dogs rescuing exhausted travelers after a snowstorm in the Alps.



Eskimo dogs dragging a sledge over hillocks of ice.



Dogs of the Monastery of St. Bernard, famous for their heroism in rescuing travelers.

DOGS OF MANY DIFFERENT KINDS, SHAPES AND SIZES



FOX TERRIERS



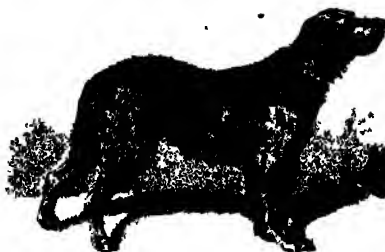
YORKSHIRE TERRIER



KING CHARLES SPANIEL



BLEMHEIM SPANIEL



AIREDALE TERRIER



SCOTCH TERRIER



IRISH TERRIERS



FOXHOUND



BOSTON TERRIER



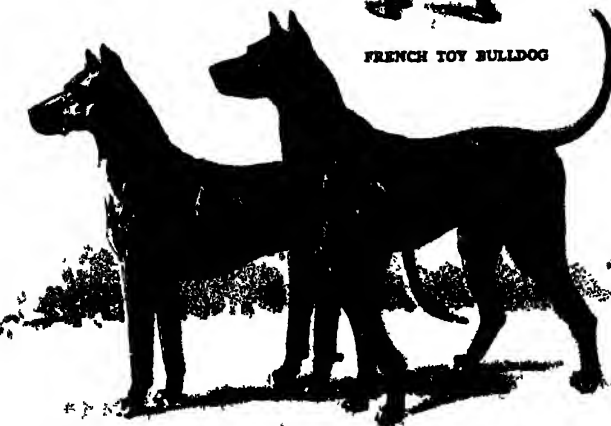
ENGLISH BULLDOG



FRENCH TOY BULLDOG



BULL TERRIER



GREAT DANES



COCKER SPANIEL

© 1918-FEWRIGHT

Different breeds of dogs vary more than horses or cattle. Some weigh only a few ounces while others are strong enough to kill a man. Some are useful because of their wonderful noses while others are valued only for pets.

The Book of NATURE



Eskimo dogs, from the fine copyright painting by Miss Maud Earl of "The End of the Trail."

THE STORY OF YOUR DOG

THE lover of the dog would be lost without the faithful creature which guards his home, or keeps him company on his walks. The dog is a very emblem of faithfulness. When it has become fond of a human being, nothing will change its feelings. Starvation and ill-treatment will not kill its devotion. It is almost more than human in its constancy. No matter how poor a man's home may be, his dog cheerfully stays with him, content with scanty food sweetened by a caress and a kind word now and then. Those who keep their dogs in luxury can hardly realize the intense devotion which the animal is capable of displaying when it is called upon to bear hardships and privation with its master and mistress. Dogs remember their friends for a long time, and will recognize them after an absence of years. They will often refuse to give their love to new owners and will pine away when sent among strangers, and they have been known to travel long distances through country unknown to them to find their way to their old homes.

Dogs were the first tame animals which man possessed. It is thousands and thousands of years since the children of the cave men and the lake dwellers of Europe tumbled about and played with the puppies whose de-

CONTINUED FROM 6247



scendants are our dog friends of to-day. Some of the races of dogs that we know are, we might say, almost as old as some of the races of man that now exist in the world. We know from the pictures on their ancient temples that the Egyptians hunted with greyhounds from very early times. The Assyrians had large dogs which tradition says the Phoenicians brought to Britain, and it is said that possibly the dogs whose pictures were carved by the Assyrians on their walls were the ancestors of the prize English mastiffs at an American dog show. Other people say that it was the Romans who introduced the mastiff to their colonies in Britain. Wolfhounds too were known from very early times. The Egyptians had them, and it is said that Irish chieftains owned the ancestors of the Irish wolfhound and Scotch deerhound when the Romans held Britain, while a Roman historian says the Roman soldiers used bloodhounds in their wars against the Gauls.

With the exception of the islands of Madagascar and New Zealand, and some of the Polynesian Islands, there is not a country in the world in which dogs have not been found, either as friends of the people who lived there, or, in a wild state, hunting for themselves in packs, as the wild dogs do in India. Perhaps, however, there is one

other exception, for we cannot be sure that the wild dog of Australia, the dingo, was not brought to that continent centuries ago by the ancestors of the people whom the early English explorers and settlers found living there.

ANCIENT FRIENDSHIP BETWEEN MEN AND DOGS

The friendship between men and dogs is so old, that it is no wonder that its beginning is lost in mystery. At first sight it looks as though they must be descended from wild dogs, such as those of which we have spoken, but this is not so. Learned men who know about these things say it is much more likely that the wild dogs are descended from tame dogs, that wandered away, just as the troops of horses on the Western plains came from tame horses that had escaped from the Spanish settlers, and gone wild.

Probably all our dogs, whether they are large or small, rough or smooth, whether they hunt for us, or guard our flocks or our houses, are descended from wolves and jackals. It is perhaps hard to believe that our faithful, loving, intelligent pets have come from fierce wolves or hungry jackals, but it is believed that they have.

If you were to go into a museum, and look at the skeletons of dogs and wolves and jackals, you could not tell one from the other, unless you had read the labels. Perhaps you have wondered why your favorite dog turns himself round and round before he curls himself up on his cushion or his rug to go to sleep. Next time you see your pet do this, you can remember that his wolf or jackal cousin does exactly the same thing when he is trying to find a comfortable resting place in his stony or grassy lair. Perhaps some of our dogs are descended from foxes, which also are included in the dog family, or they may have come from another wolf-like animal that has died out, but few people think that either of these suppositions is possible. It is generally believed that dogs as a separate race, as we know them, did not exist when man first appeared in the world.

HOW THE FRIENDSHIP BETWEEN MEN AND DOGS BEGAN

And now comes the question, how were the animals tamed from which our dogs are descended. As we have seen, ages of time have gone to make the friendship between men and dogs what it is to-day, and to look for its beginning we must go,

in imagination, far back to the early history of the world, that we have only of late begun to dig out of the earth.

In early times, man was not a tiller of the ground. He did not sow grain, or plant vegetables. He learned in course of time that certain fruits, and berries and nuts were good for food, and as certain animals, which do not rank high in the scale of creation, have the sense to store food, we may imagine that man, even in the early dawning of his powers of mind, did something of the same sort. He did not, however, store up his food on any large or systematic scale. His storehouse, and his very home, might at any time be raided and seized by some one more powerful than himself, or his cave might be invaded by savage beasts. No man will lay up store for the future unless he can be reasonably sure that the store will remain safe to serve the purpose for which it is intended. All this makes it plain to us that man, in the early days, must have lived what we call a hand-to-mouth existence. For months in the year, when there was no vegetable food available for him, he was forced to eat animal food to keep him alive, and to use the skins of the animals that he killed, to keep him warm.

From the moment then that we find the first traces of man on the earth, he was a hunter. For long ages, there was war between him and the animals, and all the flesh-eating animals—the carnivorous animals—warred on him. Now among the flesh-eating animals are numbered all the members of the dog family. Except the fox, these animals, when they are pressed by hunger, hunt in packs, for so they are able to attack large game, and pull down animals much larger than themselves. Man cannot be classed among the large animals, but the wolves soon found that he could easily outwit a single animal. Still, many a man fell before the combined onslaught of the pack, and numbers were killed, as they are still killed in Russia, and in the wild parts of our own continent and of Asia.

But man was more clever than any of the beasts. Though he had only two legs, and could not equal his four-footed enemies in speed, he had the advantage of having two hands free. He quickly learned not only to use the weapons that nature left ready to his hand, but to manufacture new ones. He could throw

a club, or a roughly made spear. He could gather up large stones, and throw them at his pursuers and kill them. That marked him off from the rest of creation. Other animals had to approach and make a close attack upon their prey. Man could stand and hurl a weapon at whatever he wanted to kill.

He probably soon noticed too that the animals that provided for him the best food, were the vegetable-eating animals, and unless they molested him, he let the carnivorous animals alone. But the animals that man slew for food were just the animals upon which the dog family themselves depended for food. Man left large portions of the flesh and bones of his prey upon which these animals could feast, and they could rob him of even the portions that he had hidden from them, just as wolves rob caches made in our own time by travelers in the wild.

THE FIRST PARENTS OF OUR PETS

But man could combine, too, and when the depredations of the wolves and jackals became too bold, probably our wild ancestors banded together, tracked them to their lairs, and killed, or drove them off. Among them, however, there were sure to be young animals, and some of these the cave men probably brought back to their rude dwellings. Probably, even if they objected to the flesh of grown wolves the young animals provided food to their liking. But we may imagine the cave children commencing to play with the little dog-like animal that the men had brought home, and begging to keep it. Then the children, as children will, divided their food with their new playmates. Every one who has much to do with dogs, knows what a difference kindness shown to them in their puppy days makes in their dispositions, so the young wolves or jackals, or perhaps both, grew to love their masters, and later on helped them to hunt. Then seeing their usefulness, the cave men caught more young animals, or, when they drove away wolves or jackals from a good cave in which they wished to live, they kept the young animals. By and by these tame wolves and jackals brought up families of their own. We know from experience in how short a time what we call a new breed of dog appears. For instance, the black retriever is descended from the black Newfoundland and the setter; and the tiny

toy dogs that we see carried about in ladies' arms have been brought into the world by selecting for generations the very smallest Pekingese, Japanese, Pomeranian, or other kinds of dogs. So it is likely that the families of tame wolves and jackals quickly changed their form, and with every generation they grew further and further away from their savage cousins of the woods or plains.

Soon a strong friendship grew between man and dogs, and a kind of partnership was made between them. The dog hunted for man, and man killed the game, fed the dog and provided it with a warm shelter.

THE SHEEP-DOG AND ITS CLEVER WORK

The friendship that grew up between men and dogs still exists, and the companionship between them is closer than ever. As civilization advanced, however, and man became independent of hunting, he became less dependent on the dog for aid. Nevertheless, in many countries, away from towns and cities, the old partnership between men and dogs exists in something like its ancient form. The shepherd who watches his flocks upon the mountains would be helpless without his partner. The sheep-dog knows its master's sheep as well as the shepherd, perhaps better than he. It will fetch a lamb out of a strange flock, and restore it to its master's fold. It will collect sheep that have scattered and strayed upon a hill in the mist; it will drive home, unharmed, the lost lamb, the sheep which has been frightened away from the flock.

Other dogs which work for their living are the pointer and the setter, the retriever, the terrier, and the foxhound.

But it is the sheep-dog that we single out as the best representative of the working dog to-day. Wherever the sheep-dog is at work, observers notice that it takes itself very seriously. It loves the shepherd, but it seems to regard its work as of first importance.

There are many different kinds of sheep-dogs, some long-haired like the Scotch collie, with its beautiful silky coat, and long brush-like tail, and some with a rough, shaggy coat like the old English sheep-dog.

Indeed every country may be said to have its own sheep-dog, of which it is exceedingly proud, and with reason, for sheep-dogs are the most intelligent of all

dogs. Probably they are descended from dogs which were first used merely to guard the flock and chase away wild beasts. Only the wisest puppies of these dogs were kept; and in course of time they learned to round up and help to bring home the flocks and herds. Faithful friends and wise and loving companions though they are, we are almost tempted to say that it is cruel to keep sheep-dogs in a city. People who have only seen them trotting along at their owner's heels or running about with muzzles on have no idea of their capabilities. It is a beautiful thing to see a well-trained, fleet-footed sheep-dog at work with its master. It watches every motion of his hand, heeds every tone in his voice or even the sound of his whistle, and quickly and silently gathers in the flock or herd with only now and then a short, sharp bark to impress upon a laggard the need for speed.

THE INTELLIGENT DOGS OWNED BY SIBERIAN SAMOYEDS

The dogs used by the Samoyedes may be classed among the sheep-dogs, for though the Samoyede tribesmen have no sheep in their Siberian home, they use their silvery white dogs to help them to look after their great herds of reindeer. But the usefulness of these wise little beasts does not end with guarding the herds. They find out fords in the rivers for their masters, tow boats along the streams in summer and sledges over the snowy ground in winter, and hunt seals and bears and wild geese. One peculiarity about these dogs is that from among the pack they seem to elect one dog who acts as its leader and chieftain.

Many instances are told of the faithfulness of sheep-dogs to their trust, but we have room for only one or two.

Not very long ago an American shepherd died, and was not found for two days. The dogs went on with the flocks; they drove them gently forward up to the high-lying feeding lands to which they were intended to go, stayed with them, then turned them homewards. Of this faithfulness there is a more charming example, with which many are familiar.

Hogg, the Scottish poet-shepherd, had a fine sheep-dog. One day a great snow-storm swept down over the moors where Hogg's sheep were pastured. Hogg called up the dog, and sent it off in one direction, while he himself took an oppo-

site route. Late at night Hogg returned with his half of the flock, but could see no sign of the dog. Long and anxiously he awaited its return. At last there came a gentle scratching at the door, accompanied by a low whine. He opened the door, and saw all his sheep safe and the dog standing there with a tiny puppy in its mouth. It placed the puppy at its master's feet, then raced off into the snow, soon returning with a second puppy, which, like the other, had been born out in the snow. The faithful creature had gathered the sheep and brought them home, but it had brought home also its puppies, as if to beg from its master the protection it was itself unable to give.

THE FRIEND OF ALPINE TRAVELERS

That is the stage to which the partnership between man and his best animal friend has come. But there is other work than sheep-minding for the dog to do. How many lives have the mighty St. Bernards saved up in the Alps? They are trained by the kind-hearted monks to go out on to the snow-covered mountains, and to find travelers who have become exhausted by the cold. The dogs call assistance by their barking. They themselves carry a little barrel slung round their necks containing refreshments. One of these dogs, a noble creature called Barry, saved the lives of forty persons lost in the snow. He found a little child lying in the snow under the influence of that fatal drowsiness. The dog roused the little sleeper by licking its face, then, lying down, allowed the child to climb upon its back, and so carried the little wayfarer in safety to the monastery.

Dogs such as Barry are big and strong enough to kill the people whom they save, and it must have been a timid person, fearing that Barry had some such intention, who caused the animal's death, for one day this grand old dog was killed. A pathetic inscription is set up over his grave: "Barry, the heroic. Saved the lives of forty persons, and was killed by the forty-first." There is not now so much need for the St. Bernards, for the railway carries people so easily through the mountains that few run the risk of crossing through the pass in autumn or winter weather. But they are still faithful to their task, and many a wayfarer owes his life to their care.

THE OLD SHEPHERD'S LAST FRIEND



THE DEAD SHEPHERD AND HIS DOGS, FROM THE PAINTING BY HENRY H. EMMERSON



THE OLD SHEPHERD'S CHIEF MOURNER, FROM PAINTING BY SIR EDWIN LANDSEER



FAITHFUL DOG AT HIS MASTER'S GRAVE, FROM PAINTING BY SIR EDWIN LANDSEER

THE DOG USED AS A BEAST OF BURDEN

When primitive men first began to make tools, and with them to model contrivances with which they could carry things, doubtless ice-sledges, to which they could harness dogs, were among the first conveyances that they fashioned. This is suggested by the fact that the Eskimos have used dogs as beasts of burden ever since they have been known to travelers.

The Eskimo dog is the animal which shows us most clearly what our own dogs used to be like. It matters not where you find him—in Arctic America, in Siberia, in Kamchatka—he is always the same, a sort of moderately tame wolf. When at liberty he mixes with wolves, if there be wolves about, and in a pack of Eskimo dogs in Arctic America there is almost certain to be as much of the wild wolf as of the true Eskimo dog. In these far northern regions we get a glimpse of the way in which our ancestors and the dogs' ancestors got on together. The Eskimos must have dogs to enable them to move their encampments from place to place. But when the day's work is done the dogs become simply wild animals. They get a few mouthfuls of fish for their wages, take a gulp or two of snow, and that is their supper; they will get nothing more from their master until the morrow, when another piece of fish will be thrown to them. They must hunt for themselves if they need more. And they do hunt, with the result that it is impossible to keep sheep, or goats, or birds where these dogs are. They kill and eat anything, and fight among themselves with terrible ferocity. Doctor Nansen, when he was exploring in the Arctic regions, lost several of his dogs from this cause. When they were liberated at night they would start a quarrel, and every one of the pack would turn upon the dog which seemed to be getting the worst of the battle, and kill it.

Although they are quarrelsome, however, Eskimo dogs are faithful to their masters, and in intelligence they are not very far behind the sheep-dog.

THE AID GIVEN BY DOGS IN TIME OF WAR

After the Great War began teams of Alaskan "malamutes" were sent to the Vosges Mountains to help to bring food and ammunition during the winter months to the French army at the front,

and a French writer says that nine of these dogs could easily draw over a bad road, loads that would tire six horses on a good road. One of the teams was employed in a part of the mountains where they had each day to travel round a mountain. This went on for some time, and then one day the dogs themselves suddenly turned into a short cut, of the existence of which their leaders had not had the least suspicion.

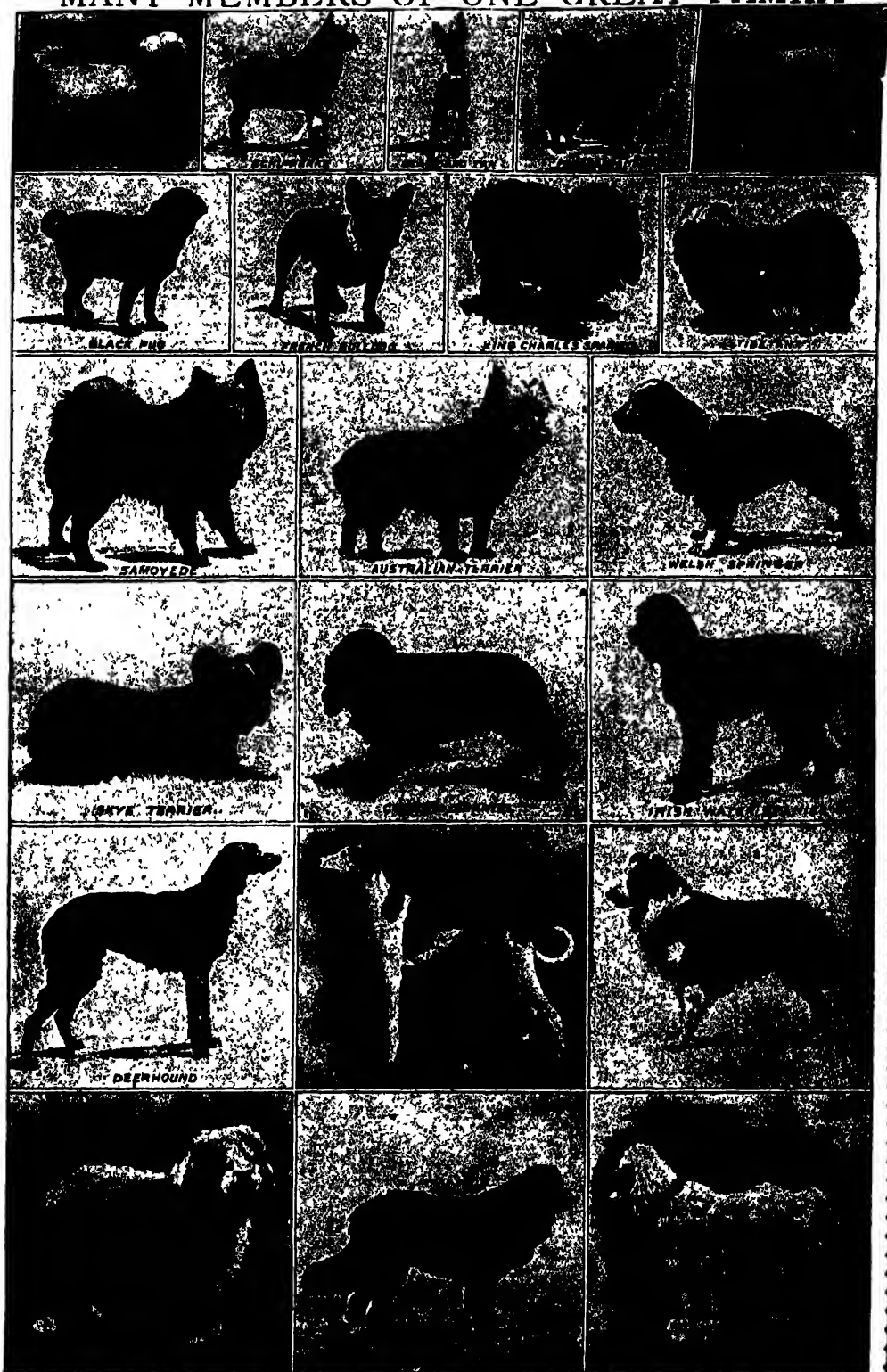
Dogs are used in many ways in war time. They are used in Belgium and Holland to draw light guns over the sand dunes; but this is only a small part of their usefulness. They are the most watchful sentinels, and are trained to give notice without barking of a surprise attack; they carry messages from place to place, and will even deliver a message to the man they are ordered to find; they draw small ambulances, and above all they seek out and bring help to badly wounded men whom otherwise the Red Cross workers might never be able to find.

Special kinds of dogs, like the dogs used to draw the Belgian milk carts, are used to draw the guns, but sheep-dogs, because of their faithfulness and intelligence, make the best Red Cross dogs. Airedale terriers, too, make excellent war dogs, and this brings us to another ancient kind of dog—the terrier. Terrier means "earth dog," and for centuries terriers have been used to follow the fox, the otter and other burrowing animals into their homes and drag them out, or else keep them from escaping until the hunters can dig down to the burrow. There are many varieties of terriers, of which the best known, perhaps, are the fox terrier, the black and tan, the Airedale, the Irish, the Scotch, the Skye, the Dandie Dinmont and the Yorkshire. Some of them are rough haired, some smooth. Some are very small, some, like the Airedale, are of a good size; but they are all brave, intelligent little animals, and faithful, loving companions.

THE MANY DIFFERENT VARIETIES OF DOGS

There are so many varieties of dogs that it is difficult to speak of them all. Hunting dogs, or hounds, alone give us many varieties; but they may be divided into two large classes: dogs who hunt by sight or rely on their swiftness to catch their prey, like the greyhound, and the wolf and deerhounds, and dogs that tire-

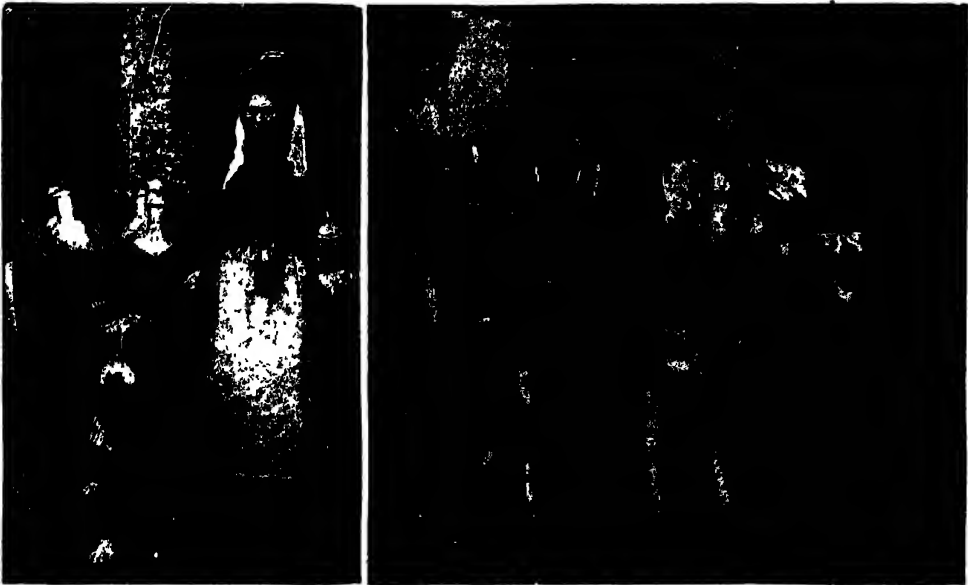
MANY MEMBERS OF ONE GREAT FAMILY



These pictures of prize dogs give some idea of the astonishing variety in the dog family.

lessly run down their quarry by scent alone, like the foxhound, the beagle, and the bloodhound. These dogs like to hunt in packs, and their bark has a deep bay-ing sound. Bloodhounds, which have been known since the time of the Romans, have an especially keen sense of smell. They have often been used to track slaves and criminals, and many a lost child has owed its safety to the tireless tracking of a faithful hound. Bloodhounds are naturally gentle, peaceful animals, but can be trained into great fierceness. Greyhounds are smooth coated, but deerhounds usually have rough coats, and the

the special races of dogs came into existence. They are all clever, and easily trained by kindness. Setters, pointers, and retrievers, like the dogs of old time, find the game that their masters have shot. When it has found the wounded bird or animal the setter sits down and waits for its master to come up, the pointer stands quivering, with nose pointed straight toward the game, and tail outstretched, but the retriever, cleverest of all, fetches the game from the place where it has fallen. This writer's mother owned a large black retriever that would swim out into the water, take a



Belgian Milk-sellers with their picturesque Dog-carts.

borzoi, or Russian wolfhound, has long, silky hair.

The long legs of the greyhound family, and their slim bodies, enable them to run with great speed, and to make long leaps. One beautiful borzoi that we knew could leap seventeen feet at a bound, and has been known to pass a runaway horse.

Several kinds of dogs have been trained to help the police in large cities. This is done chiefly in the European cities; but a beginning has been made in some of the cities of this continent.

HOW DOGS HELP THE SPORTSMEN

Dogs like the hounds, of which we have spoken, and setters, pointers, spaniels, terriers and retrievers, are called sporting dogs. It would take too long to tell how

wounded bird in his mouth, swim back with it, and lay it gently at his master's feet without having hurt a feather. Retrievers are very intelligent, and quickly learn to obey commands, and remember what they are forbidden to do.

This same dog, when he was a puppy, tried to follow his mistress to church one day. When she reached the gate, she sternly told him to go home, and closed it. He looked at her beseechingly, then turned and soberly trotted homeward, and though he lived to be old and gray, and was her constant companion in her walks, he never again attempted to follow her on Sunday morning. Nor did he ever attempt to follow the children to school, though he was always their playmate and protector when they roamed in the fields

SPECIMENS OF THE MOST USEFUL BREEDS OF DOGS



GORDON SETTER

IRISH SETTER



YORKSHIRE TERRIER



ENGLISH POINTER



COLLIES



BLOODHOUND



GREYHOUND



RUSSIAN WOLFHOUND

ITALIAN GREYHOUND



ESKIMO DOG



ROUGH-COATED ST. BERNARD

SMOOTH-COATED ST. BERNARD

NEWFOUNDLAND

TERRIER

© 1918-FEWRIGHT

This page shows several useful dogs. Pointers and setters hunt birds, collies guard sheep, and the greyhound is used in the chase. Eskimo dogs are beasts of burden, and all of you have read of St. Bernards and Newfoundlands.

and woods around their home. Once this dog was taken a long distance to a shooting party, and did his work so beautifully that the host at the party begged to be allowed to keep him for a few days longer. Next day the man who borrowed him telegraphed in great distress. The

try from a place to which he had been taken a roundabout way by train.

All dogs, whether they hunt for their masters, or help him to find the animals he has killed, or safeguard his flocks and herds, or, like the mastiff and the bulldog, watch and guard his property, may



"Dignity and Impudence," from the Painting by Sir Edwin Landseer.

dog was lost, and could nowhere be found. There was great mourning and indignation in the family when the news was told to the children, but in the morning, the household was awakened by a dog's loud barking. Dash had come home, and was announcing the fact with all his might. Afterward his homeward course was traced, and it was found that he had come fifty miles, straight across the coun-

try from a place to which he had been taken a roundabout way by train. All dogs, whether they hunt for their masters, or help him to find the animals he has killed, or safeguard his flocks and herds, or, like the mastiff and the bulldog, watch and guard his property, may be called friends of man. It does not matter whether it is a poodle whose grandfathers and grandmothers have had their names in the dogs' "Who's Who" for many generations, or a Pekingese whose ancestors lived in Chinese palaces for centuries, perhaps, or only a mongrel whose origin no one knows, a faithful dog will cling to his master till death.

THE NEXT NATURE STORY IS ON PAGE 6371.

HANNAH DELIVERS SAMUEL TO ELI



Hannah had vowed if God would give her a son she would give him to His service. Her prayer was answered. The good woman remembered her vow, and as soon as she was able she brought the infant, whom she had named Samuel, to the old priest, Eli, and gave him up to the service of the Tabernacle.

This beautiful picture is from the painting by Mr. F. W. W. Topham



THE SCATTERED NATION

THE "Book of All Countries" has now described the principal countries of the world and the people who live in them. We have read of England and the English, France and the French, of Russia and the Russians—to name only a few—and given pages of text and pictures to many very small countries with few inhabitants. Yet we have omitted one of the most important and influential peoples of the world.

We cannot find their state on the map, for they have no separate country of their own, but are scattered over the whole world. They are to be found on every continent and in almost every country. In America they are Americans; in England they are English; in the German Empire they are Germans, and yet they have not been swallowed up in these great nations.

Usually when people come to live in a country, their children intermarry with the natives of the country or with other immigrants and in a few generations the original blood can hardly be traced. Many American citizens can find among their ancestors, Englishmen, Frenchmen, Germans, Irishmen or Scotchmen who came here years ago. The people of whom we speak have not been lost in this way, but are yet distinct. Still, some of them are among

Copyright, 1918, by The Grolier Society.

CONTINUED FROM 6229

the best citizens of the countries in which they live.

Who are these people and where do they come from? They are the Hebrews, commonly called the Jews, and their story is perhaps the most wonderful in all history. There is no other tale like theirs. If you will turn to the map on page 3857 and will get your Bible, we shall soon find out some things about them. Here is the beginning of the story as told in the Bible.

THE BEGINNING OF THE HEBREW PEOPLE

Long, long ago, around a city called Ur of the Chaldees, some of the descendants of Noah lived. Among them were Abram, and his wife, Sarai. Though they had great flocks and herds they were sad, for they had no child. The Lord appeared to Abram and told him to go away from his country into the land of Canaan and promised that he would make of his descendants a great nation.

Abram obeyed and removed to the country we now call Palestine. We cannot tell here all the occurrences, but you can find the story in the Old Testament. Abram was promised a son and told to call himself Abraham and his wife Sarah. The son was born and called Isaac. He married his

cousin Rebecca and they had two sons, Esau and Jacob, later called Israel. The latter secured the greater part of his father's property by a trick, and married his two cousins, Leah and Rachel. He had twelve sons. One of these, Joseph, his father's favorite, was sold into Egypt as a slave by his jealous brothers, who did not like the way their father favored him; and there, because of his wisdom, he finally became First Minister and the real ruler of Egypt. After a time, because of famine, Jacob and all his sons and their families were moved to Egypt, where land was given them, and where they increased greatly in numbers.

Years afterward, the Egyptians became jealous of them. The rulers inflicted many hardships upon them, though they would not let them go out of the land. At last a great leader, called Moses, arose, and the children of Israel determined to leave Egypt and seek the land promised to Abraham. Finally they were allowed to go, and left Egypt, but for forty years remained in the Wilderness between Egypt and Palestine, where the Lord appeared several times to Moses and gave him laws for the people. The Bible says that the Ten Commandments were given to Moses in this way.

HOW THE CHILDREN OF ISRAEL CAME TO THE PROMISED LAND

After the death of Moses, a brave and skilful general, named Joshua, led them into the "Promised Land," where they contended for possession with the heathen tribes, sometimes conquering, sometimes losing, but always increasing in numbers. A tabernacle for worship was set up and priests were chosen to offer the sacrifices. To this period belonged Gideon, Samson and the prophet Samuel. After a time they decided that they must have a king, and Saul was chosen. One of Saul's lieutenants was a young man, David, who had become prominent because, while a young shepherd boy, he had succeeded in killing with a sling and a stone the great champion of the Philistines called Goliath.

Saul became jealous of David and several times sought his life. Finally David and some companions rose in rebellion against Saul and were able to conquer part of his territories. Saul and his sons were slain in a great battle with the Philistines, and soon after David became king of Israel. There was much fierce

fighting for a time, but at length the heathen tribes were forced to obey and the kingdom grew more powerful.

SOLOMON, THE WISE KING WHO BUILT THE TEMPLE

Many interesting events occurred during David's reign, but we cannot stop to tell them now,—not even the sad story of Absalom, his favorite son, who rebelled. At the death of David, his son Solomon became king, and under him the kingdom reached its greatest wealth and power. He built at Jerusalem a magnificent temple for the worship of the Lord; he sent ships to every port of the known world, and built great public works. The fame of his wisdom reached the ears of far-away rulers, who came to talk with him.

All of Solomon's great works cost much money, however, and at his death the people hoped that their taxes might be lightened. Solomon's son, Rehoboam, who succeeded him, was a proud and arrogant young man with high ideas of the power of a king, and threatened to make their lot harder. Under Jeroboam, the northern part of the kingdom revolted and became the independent kingdom of Israel, leaving only the southern part, including Jerusalem, called the kingdom of Judah, faithful to Rehoboam. This division took place, as we count time, somewhere between 975 B. C. and 930 B. C., that is, between twenty-eight hundred and twenty-nine hundred years ago.

THE FALL OF THE NORTHERN KINGDOM OF ISRAEL

For about two hundred and fifty years, the story of the two kingdoms is not a happy one. Many of the rulers were bad, some were idolaters, and there was much fighting. Sometimes the two little kingdoms were at war with each other and sometimes with the stronger nations about them. Egypt and Assyria at times demanded tribute, and finally, about 721 B. C., Sargon, who had been a general of Shalmaneser, ruler of Assyria, and who succeeded him, captured Samaria, the capital of the northern kingdom, and carried away many of the inhabitants to his own country, though some were allowed to remain.

What became of those who were carried away, no one can say, though some men have tried to prove many curious things. Some have said that these "Ten Lost Tribes of Israel" somehow came to America and became the ancestors of

WHERE THE GREAT TEMPLE OF SOLOMON STOOD



Solomon built a strong foundation for the temple on Mt. Moriah. Now the spot is occupied by a magnificent Mohammedan mosque, shown in the centre of the picture. Other smaller mosques stand on the great raised platform. Ruins of the Great castle built by the later kings may also be seen in the neighborhood.



To this part of the great foundation wall of the platform built for the Jews living in Jerusalem come every Friday to secure the "Kiss of the Holy City." Nearly two-thirds of the inhabitants of Jerusalem are Jews, and the government was for hundreds of years entirely in the hands of the Jews.

our Indians; some have thought that perhaps the Japanese are their descendants; some have thought that the Irish come from them; and many other theories just as absurd have been taught. It is probable that, in their scattered state, they mingled with the people with whom they lived and finally lost their religion and forgot their ancestors. Their lands were taken by colonists sent out from Assyria.

THE SOUTHERN KINGDOM IS FINALLY DESTROYED

The kingdom of Judah endured for more than a hundred years longer, though for a time it was dependent upon Assyria and then upon Egypt. Some of the rulers were bad men and the people often fell into the worship of the heathen idols such as Baal and Ashtoreth. One great king, Josiah, restored the temple, and for a time things were more hopeful. The prophet Jeremiah, however, said that trouble was coming and warned the people to repent thoroughly of all their sins. Finally, about 606 B. C., Nebuchadnezzar, king of Babylon, which was now the great power in the East, conquered the country, though he allowed the king to remain as his vassal. Many of the wiser Jews, among them the great Daniel, were sent to Babylon to serve the king. Soon the people revolted, and in 586 B. C. Jerusalem was captured and many of the inhabitants were taken to Babylon. The governor whom Nebuchadnezzar had left in charge was killed by a member of the old royal family and many of the remaining Jews fled to Egypt.

EZRA AND NEHEMIAH TRY TO BUILD UP THE KINGDOM AGAIN

In Babylon many of the Jews became important people, and after Cyrus, King of Persia, had conquered the city, he was persuaded to send those Jews who wished to return, to Jerusalem. This was 536 B. C., seventy years after the city had been taken. Later another large company, under Ezra, returned to their old home and soon Nehemiah, a pious Jew, but a favorite of the Persian king, was made governor. Esther, a young Jewess, even became the wife of a later Persian king.

Then for a long period the little province was tossed back and forth among the kings who rose to power. It was taken by Alexander the Great, who granted the inhabitants many privileges. After his death, when his great empire had fallen

apart, hapless Judæa was a cause of quarrel between Egypt and Syria, for more than a hundred years. Many Jews went to Egypt to live, and some rose to high position. From the time that Joseph went down into Egypt there had been much intercourse with the Egyptians, and many traders passed back and forth.

Finally Judæa fell into the hands of Antiochus of Syria, who massacred many of the inhabitants and sold others as slaves, and defiled the temple. Their persecution became more than they could bear, and under Judas Maccabeus, a wonderful general, they almost freed their country from foreign tyrants. Unfortunately he was killed in battle, and the work was completed by Simon, his brother, and in 141 B. C. Judæa again became independent. For a time there was peace and prosperity, but divisions arose, and the great Pompey, of whom you may have read in the history of Rome, captured Jerusalem and carried many Jews to Rome. When Pompey fell before the power of Julius Caesar, the latter made the Idumæan Antipater, a foreigner, ruler. Then his son Herod became "King of the Jews" by the vote of the Roman Senate.

HEROD, THE GREAT KING OF THE JEWS

His rule was hateful to the Jews, even though he married a princess of the old line, but his strong arm and great ability enabled him to maintain his power in spite of all his enemies who carried many complaints about him to Rome. When his troubled, stormy life was over, by his will he divided his kingdom among three of his sons. The one to whom Judæa was given was hateful to the people and the Romans took control, though Herod's descendants had a shadowy rule over some of the provinces for a hundred years longer.

During Herod's reign, Jesus was born in Bethlehem, and under the Roman governor, Pontius Pilate, was put to death, but his disciples preached his doctrines and slowly his followers grew in number. At first they came from the Jews, but after Paul became so prominent among them, they admitted outsiders (Gentiles they called them). Fierce disputes between the Jews and the new sect arose, some of the Roman rulers were tyrants, and in the year 66 A. D. the Jewish war broke out.

HAMAN MEETS HIS DOOM AT A FEAST



MORDECAI AT THE KING'S GATE REFUSES TO DO HONOR TO HAMAN



ESTHER INVITES THE KING TO A FEAST AND DENOUNCES HAMAN

Because he hated Mordecai, the Jew who sat at the king's gate, Haman plotted to destroy all the Jews in the kingdom of Ahasuerus, whose Prime Minister he was. Queen Esther, who belonged to the Jewish race, and had been brought up by Mordecai, heard of the plot of Haman and invited him to a royal feast. Haman went to the banquet, but first of all built a high gallows, meaning to ask the king to hang Mordecai upon it; but at the feast the queen denounced the Minister before the king, who ordered Haman to be hanged on the gallows he had prepared for Mordecai. Mordecai took the place of his old enemy, and so was able to protect his people.

**JERUSALEM IS DESTROYED BY THE
ROMAN POWER AFTER A FIGHT**

The Roman emperor, Nero, sent his best general, Vespasian, to put down the rebellion. Terrible fighting followed, but before Jerusalem had fallen, Vespasian became emperor and left his son, Titus, to complete the work. Titus closed around the doomed city, but its defenders fought desperately. There was no food, the soldiers on the wall were so weak from hunger that they could hardly stand. All, men, women and children, struggled to keep out the invaders, but finally the walls were broken down, the Roman soldiers entered, the temple was destroyed and the captives who were left alive were sold as slaves. This was in the year 70 A. D.

**JUDÆA DESTROYED BUT MAY
RISE AGAIN**

Thus perished Judæa and it has never been restored. The Roman Empire was divided, and became weak, and the land has been held since first by the Persians, and then by Arabs and Turks. During the Crusades it was for a little while ruled by Christian princes, but the Turks soon regained control. In 1917, during the Great War, Jerusalem was captured by the English, and many Jews hope that a Jewish state will again be set up after the centuries that have passed since it was destroyed.

Other countries have gone in much the same way. Assyria, Chaldea, Babylon are now but names. All that is left of them is contained in a few records which the wise men try to read. Their people were swallowed up and soon forgot the glories of the past.

**WHY HAVE NOT THE JEWS
DISAPPEARED AS A PEOPLE?**

Here is the strange, the wonderful difference between Judæa and all the rest. The kingdom of Judæa was destroyed, but the Jews are a vital force to this day. Never in history have there been so many of them, never have they been so influential and so powerful as to-day. What is the reason for this marvelous difference?

Some wise Jews say that the long captivity in Babylon is partly responsible. Before this time they had often forgotten the Lord and turned aside after strange gods; they forgot the Law of Moses, and neglected their religious duties. In Babylon they were in a strange land. Though many succeeded in business and others

held high places in the state, they felt that they were strangers. Their religion, the fact that they were Jews, the "chosen people," became more and more important. They thought about it, talked about it, and the feeling grew stronger. The rules of conduct grew stricter and they took a pride in obeying them. Learned men discussed the Law, "The Torah," and the interest in all the sayings of the great teachers became intense.

Not all the Jews in Babylon returned to Jerusalem: many remained there, and as business called them, traveled to different cities and settled there. What is known as the "Dispersion," that is, the scattering, began, and has never ceased to this day.

**HOW THE JEWS WERE SCATTERED
OVER THE WORLD**

After Jerusalem was destroyed by Titus, most of the inhabitants were taken by their new masters to Italy or to the Roman colonies in France and Spain. Permission was given, however, to a famous rabbi or teacher, Johanan ben Zakkai, to open a school at Jabné, or Jamnia. From this school went out many teachers, all of whom worked to make all Jews feel that nation and religion were one, that all were brothers no matter how widely scattered. There were other schools at Babylon and Alexandria, for example, and all did their work well.

They did not give up their hope of again gaining Jerusalem, and several times strove fiercely in arms against the Roman power, which did not at first treat them so harshly as might have been expected. When Christianity became the state religion of the Roman Empire under Constantine, as you may read elsewhere, their lot became harder, except as their wealth protected them. The Mohammedan power was generally friendly, and in Spain they became very important. Jewish physicians were believed to be the most skilful, Jewish traders and bankers were the favorites at many courts, and Jewish scholars and teachers were the companions of the wisest. Finally, however, they were forced to become Christians or else leave Spain.

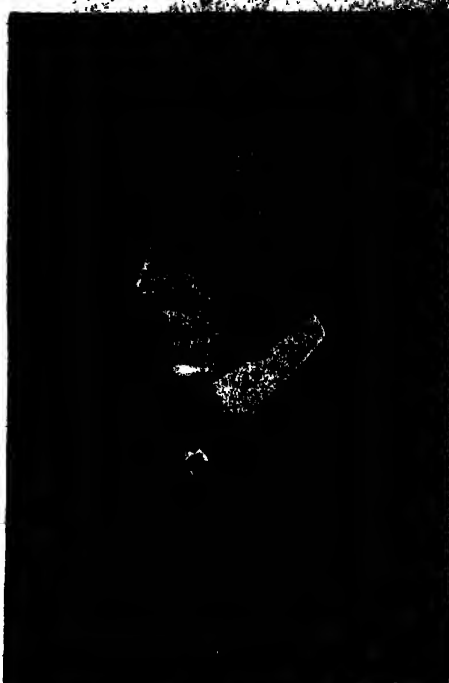
**THE TALMUD, WHICH GUIDES
JEWISH LIFE**

When they were forced to leave Spain and Portugal, they went to Holland, Italy or Turkey. For a time the princes of Germany protected them, but as persecu-

FOUR WORLD-FAMOUS JEWS



Felix Mendelssohn-Bartholdy was one of the most popular musicians of his time, and his compositions are still much admired. He was a grandson of Moses Mendelssohn, the great reformer.



Benjamin Disraeli was, for a long time, Prime Minister of Great Britain and was raised to the peerage as Lord Beaconsfield. He also wrote many novels and was a brilliant talker.



Judah P. Benjamin, of Louisiana, was a Senator of the United States, and then a member of the Confederate States Cabinet. After the Civil War he went to England and became one of the most successful lawyers in London.



Sir Moses Montefiore was one of the greatest philanthropists the world has ever known. He used much of his great wealth for those less fortunate than himself, but always gave wisely. Evidences of his generous gifts are seen in every country.

tion grew harder, many went to Poland, which was most liberal in its treatment of them though even there they suffered much. Their sufferings, however, only made them cling more closely to the Law, and the explanations of it, comprised in their sacred book called the "Talmud." Many studied nothing else, just as some Christians have said that it is useless to have any knowledge not contained in the Bible, and strict Mohammedans refuse to study any other book than the Koran.

During the Middle Ages the lot of the Jew was very hard, but as men have grown wiser they have recognized the fact that it is both foolish and wrong to persecute a man for his religious beliefs. In the most enlightened countries the laws which were unfair to the Jews have nearly all been repealed. In all English-speaking countries they have equal rights with all other citizens.

HOW SOME COUNTRIES STILL PERSECUTE THE JEWS

In Russia, however, which has included much of the old kingdom of Poland, where there are more Jews than anywhere else, conditions have been very little better than they were in all Europe five hundred years ago. They have not been secure in the possession of their property, right of travel and settlement except in certain localities has been denied them, and only a small number have been allowed to attend the schools. We shall all watch with interest to see what the new governments of Russia will do for the Jews.

It is a general rule that the more backward a country is in civilization, the more harshly it treats the Jews, or, for that matter, the stranger within its territories. Those countries which are free themselves are willing for others to be free. So it is the states of Eastern Europe, which have had tyrannical governments, which show the most harshness.

During the Middle Ages and afterward the Jews were often forced to live in a particular neighborhood and to wear a special dress or, at least, a yellow badge, so that they might be recognized at once. All of this had its effect upon them, and we cannot wonder that their eyes were always turned backward, and that they lived in the past. One great man, Moses Mendelssohn, is given the chief credit of waking his fellows from their slumber. By his writings, his addresses and his

personal influence he started a movement which has made the Jew a citizen of the world.

For a long time all the Jews observed the Law very strictly, though there were some differences among the different sects. After Moses Mendelssohn, however, a party known as the "Reformed" Jews arose. These say that all the different points in the Law do not fit modern life, and so they have omitted many of the ceremonies which the "Orthodox" Jews observe. They cling, however, to the principal things, and have many synagogues in the principal cities of Europe and America. There are also "Conservative" Jews who take a middle course.

WHAT SOME OF THE EUROPEAN JEWS HAVE DONE

To name the great men and women of Jewish blood who have accomplished so much would take a long time and occupy many pages of our book. Therefore we can name only a few, not always the greatest, but some of the most interesting.

Music is an art in which those of Jewish blood have been prominent. Mendelssohn-Bartholdy, who wrote the "Wedding March" so often played, was the grandson of Moses Mendelssohn, mentioned above. Rubenstein, the great pianist, Meyerbeer and Offenbach, the composers, and Joachim, the violinist, as well as hundreds of other composers, performers and singers, have shown the Jewish talent in this art. Two of the greatest actresses of Europe, Sarah Bernhardt and Rachel, were both born Jews, and many artists are of the same race.

In France and Italy Jews have been ministers of state, but the most interesting of all was Benjamin Disraeli, afterward Lord Beaconsfield, who rose to be Prime Minister of England. Something of his life is told in another place. But though Disraeli was of the Jewish race he did not follow the religion, but became a Christian.

THE MOST POWERFUL BANKERS IN THE WORLD

Lionel Nathan Rothschild, a member of the great family of bankers which has been powerful in several European states for a hundred years, was the first Jew elected to the English Parliament. Though refused at first, the city of London continued to elect him until the law was changed and he was admitted. His son, Nathan Meyer, was made a member

FOUR OTHER FAMOUS JEWS.



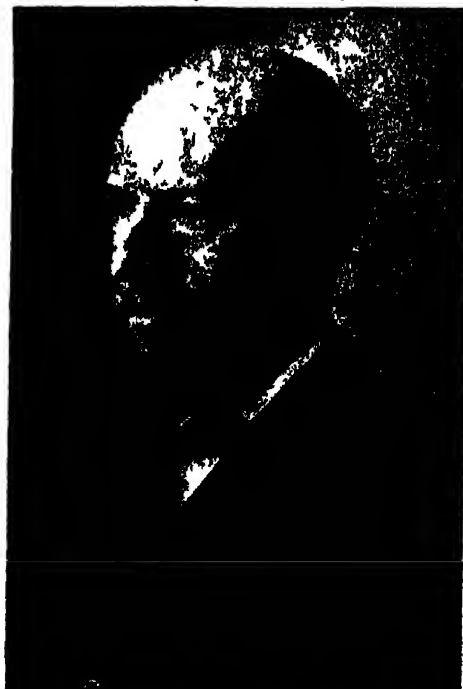
Oscar S. Straus has been three times Minister to Turkey, Secretary of Commerce and Labor, member of the Court of Arbitration at The Hague, and Chairman of the Public Service Commission of New York



Earl Reading, who was made Lord Chief Justice of England in 1913, while plain Rufus Isaacs gained great renown at the law. He has also been Solicitor General and Attorney General of England



Louis D. Brandeis studied law at Harvard and practised in Boston, gaining a wide reputation. He was appointed a Justice of the Supreme Court by President Wilson.



Felix Adler was born in Germany, but came to the United States as a child. He founded the Society for Ethical Culture, and also lectures at Columbia University.

Pictures by Brown Bros., that of O. S. Straus copyright, 1906.

of the House of Lords in 1885, the first Jew to be created an English peer. Several Jews have been members of the British Cabinet and in 1913, Sir Rufus Isaacs, now Earl Reading, was made Lord Chief Justice of England.

While the Jews in Germany have not held so many governmental positions, they have surpassed those of any other country in scholarship, and in literature. Some of the greatest scientists, the most learned historians, and most noted scholars have been Jews. One of Germany's greatest poets, Heinrich Heine, was born a Jew.

We must not forget Spinoza, the Jewish philosopher of Amsterdam, nor Sir Moses Montefiore, who gave a great fortune to help his unfortunate fellows, nor David Ricardo, whose book on political economy, which is the science of wealth, is studied in every university. The socialist, Karl Marx, was also born of Jewish parents.

These are only a few out of thousands who might be named, but they are enough to show how talent and genius will gain fame in spite of prejudice and harsh laws.

THE JEWS IN NORTH AND SOUTH AMERICA

It is said that some of the members of Columbus' crew were of Jewish blood, and some of the earliest settlers of the Spanish and Portuguese colonies were Jews. They were particularly numerous in Brazil, where they became very wealthy. From Brazil came a little colony to New York, or New Amsterdam, as it was then called. This city is now the greatest Jewish city in the world, as it is estimated that nearly 1,500,000 of them now live in or around New York. Before the Revolution there were a few Jews in nearly all the original thirteen colonies.

The persecutions in Russia, together with the hope of bettering their condition, have brought many thousand poor Jews to the United States. Here they have settled chiefly in a few large cities, where they often work hard for small wages, and are too much crowded for health. Nevertheless their condition is steadily improving, and many are becoming prosperous. The Jews who came from other parts of Europe years ago, and their descendants, are nearly all successful.

The Jews in the United States have taken, and are taking part in every form

of work. Among them are distinguished inventors, lawyers, physicians, writers, actors, scientists, musicians, artists, scholars, and successful business men, as well as mechanics, workmen and traders.

SOME OF THE POSITIONS HELD BY THIS WONDERFUL PEOPLE

Some of the most noted lawyers and judges are Jews; several have served in the United States Senate and about thirty in the House of Representatives; some have been governors of their states; some have served with credit in the army and navy; one, Oscar S. Straus, has sat in the President's cabinet; and another one, Judah P. Benjamin, once United States Senator, was a member of the Confederate cabinet during the Civil War. Justice Louis D. Brandeis, of the Supreme Court of the United States, is a Jew. Some of our most learned college and university professors are of Jewish blood. They write books, edit newspapers, manage theatres, write plays. In short, they have a great share in the intellectual life of the country.

In business they are no less successful. Some of the most important banking houses in the great cities are controlled by Jews. The manufacture of clothing is almost entirely in their hands, and they are also largely engaged in other kinds of manufacturing. Some of the largest department stores in the great cities are owned and managed by Jews.

They are liberal givers to charity and education. They maintain orphanages for homeless children, homes for the aged and afflicted, and some of the best equipped hospitals in the country have been built by Jewish money. They have organized societies to take care of the ignorant immigrant, and to help him when work fails or sickness comes. Many Jews observe the old rule of Moses which declares that a man must give a tenth of his income to religious and charitable purposes.

The desire for the education of his children is one of the most amazing and hopeful features in the life of the Jews in the United States. Coming from countries where education was denied them, they flock to the schools in the United States. While many go no further than the grammar schools, a very large number continue in the high schools, college and universities, and often carry away distinctions from their Christian companions.



THE FIRST APPLE DUMPLING

THE princess was looking up at the apple-tree, when—plop! down fell an apple at her feet!

It was not a common, ordinary apple, or it would not have been growing there, but a golden pippin.

"Oh dear!" said the princess, picking it up. "I hope you haven't hurt yourself."

"They dared me to do it," said the apple—"the other apples, you know. They said I should be afraid to let go my stalk and jump. And I just held my breath and counted one, two, three and jumped. And now I *have* done it, I'm sorry, for someone will want to eat me, and I am not nearly ripe enough!"

"I will hide you," said the princess.

And she ran into the palace to look for a hiding-place. But whenever she opened a box or a cupboard the apple cried, "That won't do. Someone will be sure to find me there!"

The princess went all over the palace, upstairs and down, looking for a safe hiding-place for the apple: and at last, feeling quite exhausted, she came to the kitchen. The chief cook was rolling out paste with a golden rolling-pin to make a roly-poly pudding with golden syrup in it for the princess's dinner.

The princess was still looking about for a hiding-place when one of the silver saucepans boiled over, and the chief cook left off rolling the paste to

CONTINUED FROM 6292

attend to it. The instant his back was turned, the princess took some paste and wrapped the apple up in it.

"No one will think of looking for you there," she whispered.

Then she saw that the door of an oven, out of which a cook had just taken a tray of tarts, was open, and she popped the apple in, to hide it twice over.

"Dear me, what is this?" asked the king at dinner, as he caught sight of a round brown thing on a dish.

"I don't know, your Majesty," was the answer. "The chief cook said he found it in the oven, but he thought your Majesty would find it very good to eat."

"Give me a knife, and I'll see."

"My dear," said the queen, "pray be careful. Suppose it should go off suddenly and blow us up!"

"Pooh!" said the king boldly. "Who's afraid?" And he cut it in two with a single stroke of the knife.

"Why," he said, "it looks like an apple. And yet it can't be. For how could an apple get inside—"

"Papa," put in the princess, "I think it must be the apple I had. It wasn't ripe and was afraid someone would eat it. But perhaps it won't mind so much now it is cooked."

The next day the king asked the princess to show the cook how to hide some more apples. And that is how apple dumplings were invented.

THE FIRST HOME, SWEET HOME

A TALE OF A HUNDRED THOUSAND YEARS AGO

AFTER the wild dog pack swept all the animals from the land around the Thames, Wawa and his tribe had bad living. They were hunters who fed chiefly on meat. They did not know how to till the soil and grow food, and were compelled to live on acorns and wild fruit.

Swar did not like acorns at all.



WAWA SAT THINKING HOW TO KEEP UP THE FIRE

"This is pigs' food," he said; one day, to his father. "Even my dog will not eat it!"

"He'll eat it," said Wawa impatiently, "when he is starving like the rest of us."

But the strange thing was that Swar's little dog never seemed to get hungry. The men were weak and the women sad and the children thin and pale. Wawa sat by the great camp fire on Cornhill, trying to think how he could get meat for the tribe to live on. Like his people,

he was very lean and worn, and he was losing his wonderful strength of arm.

"I am afraid, my little son," he said to Swar, "we must tramp back and see if the terrible dog pack has left any game there. We shall starve if we stay here much longer."

He rose up wearily to examine the trees and make plans for building a huge raft. The Thames in those days was a wide swirl of water resembling the Amazon and the Mississippi. Instead of flowing into the sea, it ran into the Rhine. It was more by chance than by skill that the tribe had crossed the river safely in the summer; and now that it was swollen with autumn rains, it seemed impossible to return.

"Still, we must risk it," said Wawa, speaking round the camp fire that evening to all the tribe. "It is clear that if we stay here we shall perish. The wild dog pack may return and destroy us. Remember how hard we found it to beat them off before, and they will be even more savage this time. Even if we escape that danger, we shall not live through the winter, with nothing growing on the trees, and no game in all the forest."

As he spoke, the little dog came running through the jungle with something in its mouth. Terror, as he was now called, dropped what he carried at Swar's feet, and then looked up in the boy's face, waiting for a sign of approval.

"By all the glory of the sun," shouted Wawa joyfully, "the little Terror has saved us! Look, he has brought good meat!"

"Hunting! Good hunting!" shouted the tribesmen.

Wawa held up a dead rabbit. Being hunters of big game, he and his men had only searched the jungle for the tracks of deer and of wild sheep and oxen. The night raid of the dog pack had killed many rabbits, and those that

remained dared not show themselves in the daylight. Terror had hunted them by scent in the darkness. Having made a good meal, he had killed for his companions, and brought his kill to Swar.

Terror was furious when Wawa seized the rabbit and held it up for the tribe to see. Leaping up with a snarl, he dragged the animal out of the chief's hand, and again laid it at Swar's feet, and then stood by, growling, ready to attack anybody who tried to rob his master of the spoil.

Wawa roared with laughter, and stooped and patted the faithful dog.

"Well done, Terror!" he said. "After all, Swar is your chief, and you owe your life to him. He shall have the rabbit, and we shall all profit by the lesson you have given us. You have managed to keep fat and strong on rabbits, and so may the tribe."

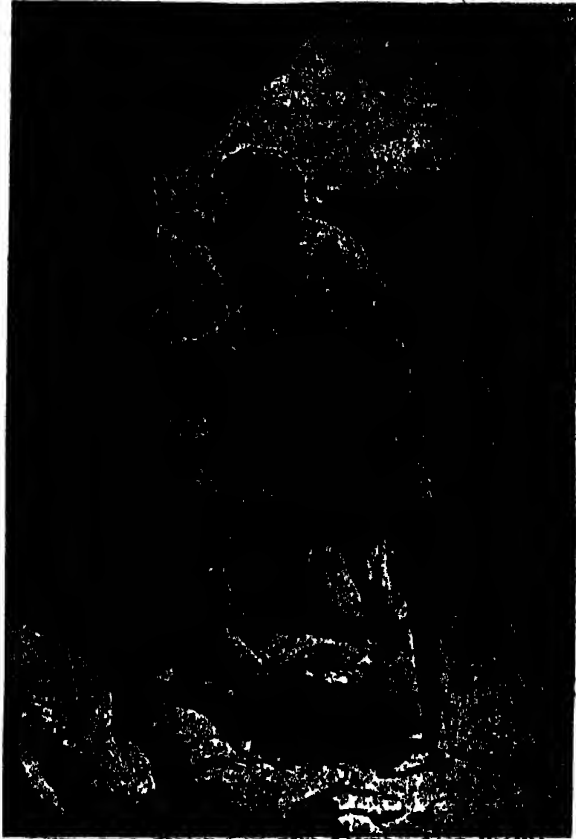
All thought of re-crossing the mighty river was now given up. The young tribesmen were soon busily engaged in searching for rabbits. The older men made a temporary camp in a flint quarry, and chipped some of the smaller flints into small rough stone knives, sharper-edged than the great stone axes they were accustomed to use. Then the women, taking the new knives, with infinite care, cut the skins of their tents into thin strips of leather, and with these made a great number of snares, which were placed over all the rabbit holes found in the forest.

Thus the tribe at last managed to get food as winter was coming on, when fruit of all kinds was becoming rare. Unfortunately, all the tent skins had to be used in making the snares, and when it began to rain heavily, life in the camp became very uncomfortable.

There were days when the great tribal fire was almost put out by the continual downpour, and Wawa became very anxious. In those days there was no one who knew how to kindle a fire. Men had not discovered how to make a flame. It was from rare forest fires and from distant volcanoes that the

tribes obtained the blaze they guarded so carefully.

Wawa had carried his precious fire all the way from France, and had built rafts to carry it over the rivers the tribe crossed on their strange journey into the unexplored jungles of England. Now he sat thinking vainly for hours of some means of preserving the sacred camp fire from being put out by the



"WE WILL FIGHT FOR THE CAVE," SAID WAWA

unceasing torrent of rain. If it were allowed to go out, it would be weeks—even months—before they could get it again.

Wawa was a very wise man—one of the wisest men who ever lived in any period of the history of the world. He was only a savage, ignorant of everything on which our own civilized life is based. No savage in the wildest country at the present day is as wild as he was. He and his people clad themselves in skins which they could not even roughly sew together. Several thousand years had to pass before men learned how to make a rough needle by

boring through a small wing-bone of a bird. Another vast period of time then followed before men discovered how to sow grain and gather it and store it. There are some ants—farmer-ants they are called—that do this. But no man in Wawa's time was as wise as these ants.

And yet, though he lived in that far-off time, Wawa was a man of genius. He could invent new things. It was by the slow and painful efforts of men of his sort that mankind gradually improved its way of living. Wawa first tried to protect his fire from the rain by building over it a rough shelter of leafy boughs. But the shelter was so badly built that the wind blew it down, and, in falling, it almost put out the dying fire.

"So that won't do!" said Wawa angrily.

Not knowing how to sew, he could not make new coverings out of rabbit-skins, and again for some hours he sat

by the flickering fire, puzzling his brains. He did not go to sleep that night.

"Come with me, Swar," he said to his little son, at daybreak, "and bring your dog with you. I want to explore that hill where I found you with the lioness."

Nothing stirred in the jungle, and when they came to the northern height, they found that that too was deserted. The wild dog pack had swept the caves in the hillside free from the huge beasts of prey that used to dwell there.

"The great beasts will come back," said Swar, "won't they, Daddy?"

"Yes, my son," said the chief grimly. "They'll come back when the deer and the other game return. But they will find their caves occupied. Then we will fight for the caves, and see who is master, man or the animals!"

That was how, thousands of years ago, man first made a home in a cave.

WHEN THE FIRE WENT OUT

OUTSIDE the largest of the caves on the northern heights of London, a little boy, clad in a lion skin, was hammering at a flint with a stone axe. All around stretched the rank, green jungle growth. Over the tops of the sycamores and fig-trees the Thames could be seen, a great breadth of shining water, nearly a mile broad in places, with a terribly swift current. The rains had begun, and the river was filling up from all the little streams from the hills. It swept into the Rhine. This was thousands of years ago.

"Look at the fire in the stone!" cried the little boy to his father, as with his stone axe he struck sparks out of the flint. "Oh, look at the fire in the stone!"

A broad-shouldered man, a mane of red hair falling over his back, and a great red beard and moustache almost hiding his face, came out of the cave, laughing. He was Wawa, the chief who had led his tribe across the river which divided France from England.

"So you have found out, little Swar," he said, "that there is fire magic in stones. All the tribe knows that, my little son."

"Then why don't you make a fire with it?" said Swar.

"We can't make fire out of magic,"

said Wawa rather sadly. "Not even the greatest wizard can do that. By the flaming sun, I wish we could get fire from the stone, now that the rains are setting in! The woods are all so wet and we cannot get enough firewood under cover in time."

And he went back slowly into the great cave to see that the tribal fire was burning well and bright. In those distant days man had not yet learned how to make fire. Here and there a tribe had found a forest blazing in a summer drought, and, snatching some flaming branches, had made a fire. In other places, far to the south of Europe, fire had been got from a volcano. It was the thing which the poor ignorant savages valued most. It was the only thing they possessed which the beasts had not.

On the young unmarried girls of the tribe fell the duty of feeding the fire night and day, and keeping it alight. The tribesmen used the fire to harden and sharpen the wooden spears with which they did most of their hunting. After being charred, the ends of the wooden sticks were scraped with sharp flints. It took a week to chip into shape a great stone axe, while with a fire a wooden spear could be made in a minute or two; so these spears only were employed in ordinary hunting where

every tribesman needed several in a day's hunt.

Swar, who had just reached his seventh year, had resolved to attack nothing smaller than a mammoth. There were several of these huge, wooly elephants in the jungle which stretched between Hampstead and the Thames; and two days before, while Swar was squatting by his father's side near where Camden Town now is, he had caught a glimpse of one of the great beasts.

In serious, childlike fashion he went on hammering at the big stone which he wished to make into an axe. Sometimes he hit the stone; sometimes he hit his fingers. There was not enough strength in his little brown hands to strike the least bit off the great flint. Terror, the wild dog which he had found when a puppy, and trained, kept frisking round him, and trying to get him to play. But for some time Swar vainly went on with his work. He had seen two tribesmen making a tremendous stone axe for his father, and naturally he, too, wanted to make one for himself.

Suddenly he was interrupted. A young tribesman came running at full speed up the hill, breathless and wild with excitement.

"Deer!" he shouted. "A great herd of deer down by the river!"

Out of all the caves rushed a crowd of joyous men and women and children. Winter-time was at hand, and the tribe had not seen any big game for months. The rabbits had saved their lives, but rabbit-flesh palls.

"Seven spears for every man!" cried Wawa, in a loud voice. "And down to the water at once! Women and children all follow, and help to bring the meat home!"

Then Bina, his wife, spoke.

"But some one must remain at home to tend the fire," she said.

"Well, let the youngest children do that," exclaimed Wawa. "You know how we had to starve all the summer. It may be worse in the winter if the dog-pack returns and sweeps the jungle again, and it is likely they will scent the deer."

"Yes, yes!" shrieked all the tribesmen, dancing in excitement, and waving their spears above their heads. "We cannot lose a single deer. Leave one of their bodies for a minute, and a wolf

or hyena will get it. The chief is right. All the women must come with us."

Wawa was already running down through the jungle at a hard, steady pace. His men whooped, and then followed him silently and swiftly; and the women and girls and older boys went after the men.

Bina stayed behind for a minute, and talked to her little son.

"Now, Swar," she said very earnestly, "you must be a great chief like your father, and see that all the children keep the fire burning. Make them bring a lot of branches and put them all carefully on the flames."

"Very well, mother," said Swar proudly. "You'll see, I'll make the biggest fire in the whole world."

When his mother went away it began to rain heavily. But this did not daunt Swar. It was the first time he had been set in authority, and he was resolved to astonish the tribe by his magnificent work. He kept the children for hours running out into the jungle, and tearing down wet, dripping branches. When they could not reach the branches themselves they grasped and tore off armfuls of wet leaves. At last a big mass of soaking leaves was built above the fire, and Swar was still keeping the children busily employed, when the tribesmen came tramping back with the spoils of the hunting.

Wawa dropped the two deer he was carrying when he saw what his little boy had done.

"By all the splendor of the sun," he cried, in a wild voice, "what have you children done to the fire?"

He began to tear away the stack of wet leaves. Quickly the men saw what was the matter, and so did the women. Shrieking with fright, they, too, tore at the wet green stuff, and at last pulled it all off the hearth. But it was too late—the rain-water had completely put out the fire. Where it had been, there was now only a pool of dark mud.

In the darkest corner of the cave crouched Swar, sobbing as though his heart would break. His father was too upset to be angry with the little boy. The loss of the fire was the most terrible disaster which could have occurred to a tribe. It left them open to attack from the most cunning and the most savage of all the wild beasts—the huge cave

bear and the huge cave lion, who were certain to return now that the deer were by the Thames. At first Wawa thought it would be safer to camp out in the jungle; but it was still raining heavily, and the tribe now had no skin tents. They had used all their skins in making snares.

"Well," he said, at last, "the women and children must sleep together in this big cave, and the men must take turns in keeping awake at nights and watching over them."

"You sleep, too, chief," said one of his men. "You must be more tired than any of us."

"No, I will help you keep watch," said Wawa wearily. "I cannot sleep. I must think of a way," he added. "Oh, if only there was a tribe from whom we could borrow fire!"

But there was no other tribe within a hundred and fifty or two hundred miles.

Weeks must elapse before a fire messenger could go and return.

"It will be necessary," thought Wawa sadly, "to go back across the river."

As he was considering whether he should wait till the meat was cured, or lead his tribe away at daybreak, a cold wet little figure came and nestled up to him.

"Father," said Swar softly, "couldn't we get some of the magic fire out of the stone?"

Wawa shook his head. He looked down at the ground, thinking of other things, and his eyes idly rested on a heap of dry leaves in a corner. The dawn was just breaking.

"That's it!" cried Swar, following his glance. "Let us set light to the leaves with the fire in the stone."

Sitting among the dry, withered stuff, he began eagerly to strike fire from the flint. It was easy work after making an axe, and being chief of all the children. His father watched him listlessly. Suddenly he started up with a cry of joy, and, taking the stone and the flint axe from his little son, he began to strike them together quickly and lightly and steadily. He had seen a spark burn a tiny hole in a very dry leaf.

Half an hour afterwards the men and women and children were awakened by a wild, shrill, strange song. Wawa was dancing about the cave, singing and holding Swar above his head. In a corner was a little smoking heap of leaves and twigs. Man had made the great discovery—he had found out how to make a fire.

HOW THEY GOT A HOLIDAY

SOME schoolboys, who had failed to obtain a coveted holiday, thought of a plan for getting the schoolmaster out of the way.

"If we could only get him to think he is ill," said the eldest of them, "he would be ill"—which was perfectly true. So they arranged that, as they entered the school the next day, each one should say to the master:

"Good-morning, sir! I am sorry to see you looking so ill."

The schoolmaster replied, "Ill? I'm sure I don't feel ill."

But when others made the same remark, after a little he shut his book, and said he would return home.

So the boys got the wanted holiday. But the next morning they were surprised to find nobody at the school.

"The master must be really ill," said the boys. "We had better inquire."

A deputation started out and on the way they met a man, who told them that the schoolmaster lay in his house tossing on his bed in a fever.

"Follow me," said the eldest boy, "and do as I do."

He led them into the sick-room, and, going up to the master, said: "Good-morning, sir! You are looking quite yourself again."

"Am I?" said the schoolmaster. "I was feeling very ill."

"Oh no," said the boys. "You are nearly well again. You ought to get up and take a walk."

"Perhaps you are right," said the sick man. He got up, and in a few hours had quite recovered his health.



WHAT THIS STORY TELLS US

WHAT do we mean by the spirit of a country? Does a country really have a spirit, and if so, what is it? This question is not so hard as it seems, for we do know that the people of a country differ very much in their ideas, and in the way they look upon the world. We say that the people of some countries are slow to change, dependable, and obey the laws; that the people of other nations are restless and unreliable. This story tries to tell how Canadians look upon their country, and the world, and what are the deepest feelings they have. We are told that the Canadians are proud of their own country, and yet are loyal to the British Empire; that they feel that their country is sure to become one of the most important parts of the world.

THE SPIRIT OF CANADA

WHAT is the spirit of a country and where does it lie? At first this seems a puzzling question; but when we think about it a little we find that it can have only one answer: The spirit of a country is the spirit that animates the great mass of the people, and it has its home within their hearts.

You see, therefore, that each child of the nation is born to be a guardian of the spirit of the nation. To each one comes the responsibility of helping to give it strength to soar high in the heavens, with the strength and vision of an eagle, or of letting it creep along the ground, a broken moth, with feeble, fluttering wings.

Each person that we meet has one or more striking characteristics, which stand out as a sort of index of his spirit, and we say he is loyal, he is true, and honorable, or he is false, or dishonorable and cruel. Nations are made up of persons, and so they, too, have this index, and it is wise to take stock of our spirit, and hold fast to the good that is in us. As the boys and girls of to-day feel and think, so will the nation of to-morrow be.

Although Canada of to-day is a far different country from Canada of yesterday, to understand the spirit of Canada we must look back into the

CONTINUED FROM 6297



past. When we have done that we may look forward to the

Canada of the future, which is destined to become a great and mighty nation.

For a century and a half, the history of Canada was one of conflict, and it was not until after the country came under the British flag that we find the beginning of constitutional government. This was given by the Quebec Act, which, although it did not provide for government by the people, was a constitution, under which the government had to work, and was in a measure a preparation for the responsible government which came later.

We must remember that at the time of the conquest of Canada, the French government was despotic, and the people were not accustomed to self-government and did not ask for it. It was otherwise with the English-speaking settlers in Ontario and the Maritime Provinces. They were of British blood, and had been fighting for liberty for many centuries.

Within twenty years after the conquest, the United States had fought the War of Independence, and had been declared independent. But, as we have read elsewhere, there were thousands of people who had not wished to revolt against Great Britain, and wished to keep their allegiance to

the flag under which they were born. Large numbers of these people were loyal to their principles and left the country to make new homes in other places. Many of them came to Ontario and New Brunswick, and the Eastern Provinces of Quebec. These pioneers, as we can imagine, were for the most part strong men and women, whose outstanding characteristic was their loyalty. They had a great influence on the future of the young nation, and loyalty is still one of the distinguishing marks of the Canadian spirit.

These men were not content with the government provided for them under the Quebec Act. They had a strong and determined love for liberty and freedom, and almost before they were settled in the country, they demanded the right to govern themselves. As early as 1784, New Brunswick received her first constitution, and four years later, a new constitution was given to Ontario and Quebec.

This was only the beginning of the struggle for complete self-government to which they were impelled by their love of liberty. It is true that some of the people were inclined to go more slowly than others. Some of the pioneer settlers were steeped in the shadowed memories of a past struggle for king, institutions and country. They were embittered against what seemed to them too democratic tendencies, and prejudiced against the radicals of England, who had assisted in ruining the royal cause in America, as well as against the French of Quebec, who had been so long the traditional enemies of England, and the sincere foes of British supremacy in North America.

It is difficult for the Canadian of to-day to comprehend the situation in those older days. Newspapers were so few as to be of little significance. Books were scarce, high-priced and of a character not intended to throw light upon existing problems. Towns were small and far apart, and the English settlers at first were scattered. Gradually, however, the population increased. Schools were founded, and the intellectual life of the provinces awoke. At first it showed itself chiefly in political activity.

The people of Lower Canada were still wrapped up in the traditions and surroundings of many years before. Under the British flag they were dreaming of

the ideals of Old France in the days of Louis XIV, and of New France in the time of Frontenac. When the parliamentary system of government came to them they accepted it as a part of the new situation, but soon learned to use it to defend their old institutions against change. In Upper Canada, the increasing population had different political ideas, and soon a struggle arose, between those who desired to hold on to what they looked upon as the settled order of things, and the more adventurous spirits who sought for greater progress and freer institutions.

From the struggles in both provinces came the Rebellion of 1837, and later the conflicts which ended in Confederation, in which the Maritime Provinces joined. British Columbia, which already had a constitution, soon became part of the Dominion, and, as the land was settled, the younger provinces came in. With Confederation came responsible government, the most democratic form of government there is, and to-day the rule of the people, by the people, and for the people, is recognized as the only possible form of government for Canada.

The political leaders have greatly changed in character as the country has slowly broadened from a colony into provinces, from provinces into the Dominion, and from the Dominion into a British nation. At first, the idea of Canada as a nation did not exist. For a time the English leaders strove to imitate English manners and customs, while the French continued to dream of the past. But as years advanced, a national feeling awoke. Quebec has lagged behind the other provinces, but in spite of what sometimes has seemed like backward steps on their part, there is an ever growing feeling that, whether French or English, all are Canadians. The people of Quebec see that their future is wrapped up in the future of the Dominion, and the majority realize that they as Canadians are interested in everything that promotes the interest of Canada.

Since Confederation, Canada has been practically independent, and can truly say, "Daughter am I in my mother's house; but mistress in my own." This does not mean that she has any desire to break away from the Motherland. On the contrary, the pride of Canadians in the British Empire has grown with the

passing years. Instead of putting on the cloak of Independence, Canada prefers to develop her resources and to work out her destiny within the empire of which she is a part. Suggestions of a break with the Motherland pass unnoticed, for the people have no interest in them. Nevertheless, though Canadians are proud of their place in the empire, proud of the work that the empire has done in the world, and of the stand that it has taken for justice and right, there is a strong national feeling in Canada. Canadians have a profound love for their native land, that is sometimes hidden, but is always there.

This feeling is closely interwoven with their love for, and pride in the empire of which the Dominion is a part. Like the people of all the sister Dominions, Canadians unite democratic institutions with a fervid love for, and loyalty to the British Crown; the knot, as it were, that ties the invisible cables that hold them together. They look upon the Motherland as grown children look upon the home of their childhood. It is the place where all have a common right to meet, where all are sure to find a welcome.

That this is no mere sentiment, but a deep, insistent feeling, has been proved on many a hard-fought battle-field. More than once Canadians have gone to the aid of the Motherland, unasked, that they might help her to uphold the standard of loyalty, right and justice. When the empire was hard pressed, Canada held back nothing. Her bravest sons went out to fight, her daughters stayed at home, not to weep, but to work, and she gave unstintingly of her resources to further the cause that she had at heart.

The continuance of these close ties is of great importance to the empire. Canada holds the bridge in territory, and power, and upon her continued loyalty depends the unity of the imperial system.

Canada lies in the great pathway of commerce; her transcontinental lines furnish the shortest routes around the world. Only a small, though increasing, part of the millions of acres of rich agricultural lands are under cultivation. Either wheat or traffic would make Canada a very prosperous nation. The inland water courses are being improved and this development will have a great influence upon transportation. Future generations may witness the unique

spectacle of vessels from Europe unloading from the elevators at Winnipeg or cruising for hundreds of miles up the Saskatchewan for cargoes of grain. This is an alluring prospect and the Canadian pluck and enterprise may bring. The waters of Canada, apart from the soil, are the greatest and most valuable undeveloped resource. More valuable than minerals, because, properly conserved, they will never be exhausted, but, on the contrary, they can be increased. Water power will be the most important factor in Canadian progress and industrial development. Canada possesses all the metals and minerals that mankind uses, but the wealth of her mines has scarcely been touched. Her fisheries, ranking with those of any other country, are yet in their infancy.

Her thousands of square miles of forests under proper care and management will ensure unlimited wealth for the future. All these conditions assure for Canada the foremost rank as a producer of raw materials and as a manufacturer of finished articles.

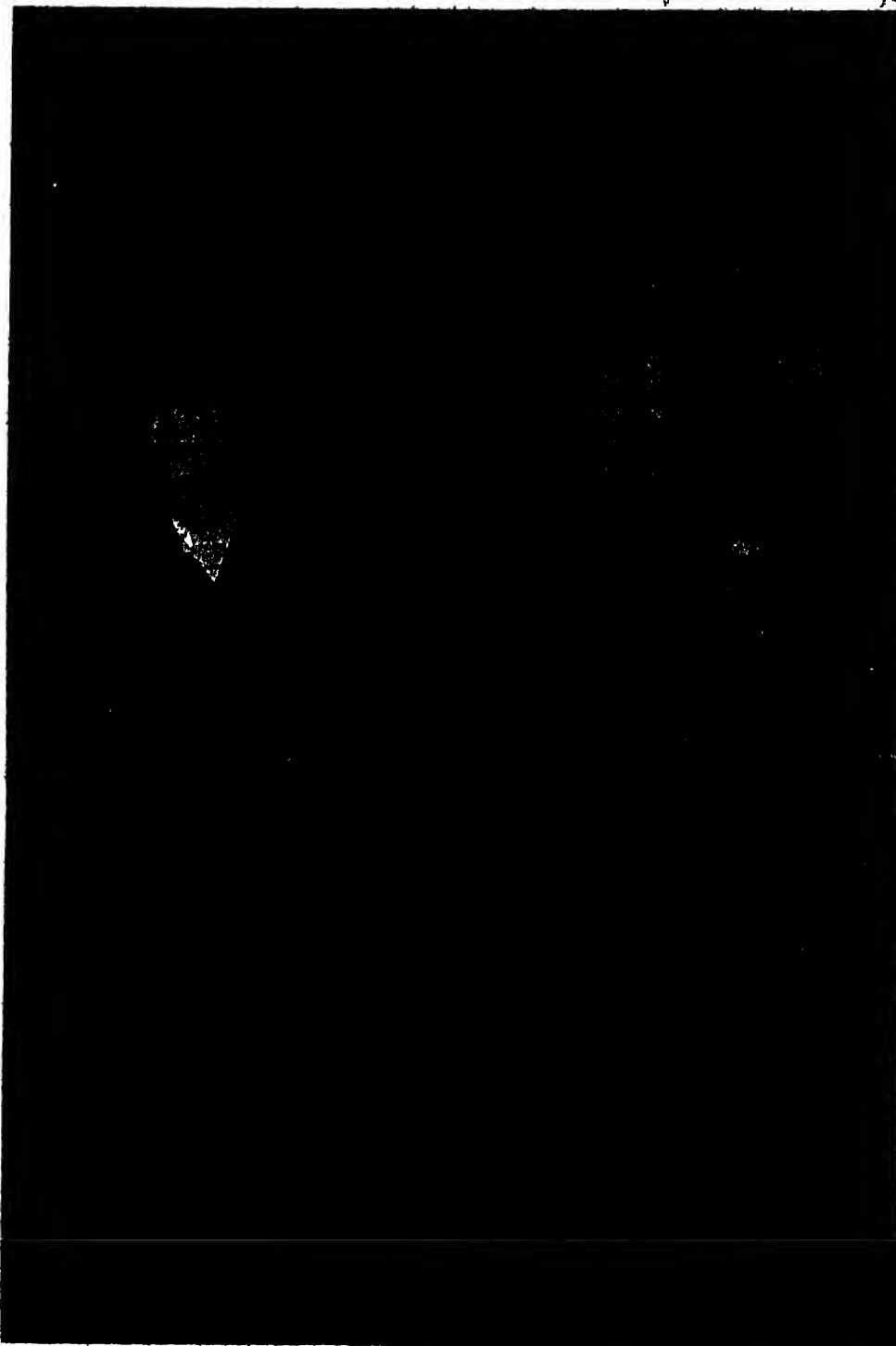
Canada has learned a valuable lesson from the great producing nations of the world. Everywhere else the policy of protection of natural resources was not developed until these resources had been largely exhausted.

In Canada the people have in time realized the importance of protection of the great natural wealth of the country, and much has been done by legislation to protect and help the development of the natural resources. The people know the importance of legislation dealing with the protection and the promotion of material wealth and the comparative unimportance of mere party conflicts.

The four hundred years of Canadian history which has gone into the making of the Dominion are of a nature to stamp its future with every fair prospect of success. The position of the country, the extent, the resources, the unity and the transportation facilities should make the wealth and the commerce of the future as certain as the aspirations of the people are strong.

While the people of Canada keep their loyalty, and hold fast their ideals of truth and justice, their faith in the Empire and the Dominion, and the unity without which no nation is strong, they need have no fear of the destiny of their country.

A MODERN WIZARD



This picture of Thomas Alva Edison, in his vigorous old age, was taken in front of the first motor that he made when he was working out the system of electric lighting by incandescent lights, which have taken the place of arc lights. The little motor is carefully preserved in his power house, amid all the powerful machinery of which it was the forerunner. It is difficult to say which is the most important branch of electricity with which Mr. Edison has been connected. Photograph copyright, Brown Bros., New York

THE BOOK OF MEN & WOMEN

WHAT THIS STORY TELLS US

THIS is the story of a man who by hard work has gained a place in the admiration of his fellow countrymen which has been seldom surpassed. Few people are able to do such work as Thomas Alva Edison has done. We must remember, however, that if, at any time in his early life, he had been content with the work that he had done, he might have remained all his life a magazine vendor on a train, or a telegraph operator. If he had been content to stand still, not only his country and the world, but he himself, would have been the loser. He did not stand still, for he was discontented with himself, and so he is known the world over. It is probable that he would be well content to be known as a man who has always done his best, and, even though we cannot all make great inventions, that is a title that any one may deserve. We never know what we can do until we try, and so this story of a Modern Wizard who found out, by trying, what he could do, is of great interest and encouragement to us, though we may never accomplish the wonders he has achieved.

A MODERN WIZARD

SUPPOSE you are a boy or girl living on a farm remote from a large town. Nevertheless

you may sit on your veranda in the summer evening, reading THE BOOK OF KNOWLEDGE by electric light, while your mother sits gently swaying in her rocker, her needlework in her hands, listening to the voice of one of the great singers; your father sits, smoking, now and then standing up to change a record in the phonograph from which the sweet sounds come pouring out. Or perhaps it is a winter evening; then you may telephone to a party of young friends to come and dance to the music of a good orchestra, or, gathered round a cosy fire, you may listen to a recital by a great violinist, or if you have been reading in the Book of Men and Women of the music written by the great musicians, you may turn to your phonograph so that your ears may become familiar with the sweet and stirring songs, simple melodies, dances or great sonatas and symphonies that they have written. Or, perhaps, it is Friday evening. Home lessons are laid aside until Saturday; there is a "movie theatre" in the nearest village, or motion pictures are given in the school-house. Then for an hour or two you are taken to places of interest in our own country, or in places far distant;

CONTINUED FROM 6257



you laugh heartily over a comedy, or your hearts ache over some sad, pathetic story. A great parade was held in one of the cities a week ago, and the men and women march down toward you on the picture screen; you see

the launching of a proud ship; the forging of a giant anchor; a carnival held in New Orleans, or in Rome, or perhaps a wedding procession in Bombay.

How all these things are done is told in other parts of the book. Here we are going to read something about the man to whom we owe it that our lives are so much richer than the lives of our grandfathers and grandmothers, or even our fathers and mothers when they were young.

Thomas Alva Edison worked out his inventions by known laws of science. This means that he studied these laws, so that he was able to apply them to make real the visions of his imagination. Yet he had few advantages and little help, and his story is one of those that inspire us to great effort to cultivate the talents that have been given to each one of us.

He was born in February, 1847, in the little village of Milan in Ohio. His parents were poor because his father did not keep to a settled occupation. He had the same kind of mind as his

wonder-working son; the kind of mind that is called versatile, that can easily turn from one thing to another. He had not learned, however, that it is necessary for a man with a versatile mind to learn to do one thing thoroughly before he turns to another, and so he was not successful.

Edison was a quiet, thoughtful little boy, but very inquisitive and always wanted to know how things were done. He was not very strong, however, and was not sent to school until he was quite a big child. When he did go, his teacher, who does not seem to have been very wise, thought him stupid because he asked so many questions. So his mother, who had herself been a teacher, took him away from school at the end of two months and taught him at home. With so kind and loving a teacher, he made rapid progress; and above all, he learned to think. His mother had some good books, which he learned to enjoy; and when he was ten years old, he read Gibbon's *Decline and Fall of the Roman Empire*; Hume's *History of England*, and began to study an encyclopedia. It was probably from the encyclopedia that he first learned to take an interest in chemistry.

By this time, his parents, who had moved with him to Port Huron, Michigan, were able to indulge him in his love for making experiments, so he bought some books, made a little laboratory in the cellar of his home, and there laid the foundation of his knowledge of chemistry.

When he was twelve years old, he decided to start out in life for himself and became a newsboy on the train which ran from Port Huron to Detroit. Such a newsboy had never been seen before. He was given a corner in the baggage car in which to keep his stocks of newspapers, magazines and candy. To this corner, he moved his little laboratory and library of chemical books, and when he was not engaged in his business, went on with his experiments. Still time hung heavy on his hands, and to fill it up, he bought a printing press and type and published on the train a weekly newspaper filled with local news, stories of things that happened on the railway and notes of the markets.

All went well for two or three years. But when he was in his sixteenth year, one day a phosphorus bottle was jarred off one of his shelves and broke on the floor. It set fire to the baggage car, and in his anger at the danger to his train, the

conductor not only put the boy off the train, but soundly boxed his ears. That was the most unfortunate part of the accident, for as a result of the boxing Edison gradually lost his hearing, and became almost totally deaf. His stock was lost, but an act of great bravery on his part brought to his aid a new resource, and opened up a new field for him to work in.

He was standing one day on the platform of the station at Clemons, in Michigan, watching a train come in, when he saw the station agent's little boy on the track right in front of the oncoming engine. Another moment and the child would have been crushed; but Edison sprang to the track, seized the little one in his arms, and rolled with him to one side, just in time to escape the wheels. To show his gratitude the baby's father offered to teach telegraphy to Edison. The offer was gratefully accepted, and now that his career as a train newsboy was closed he turned to his new accomplishment as a means of making a living.

He worked at telegraphy for some years, first in Port Huron, in Michigan, then at Stratford, in Canada, and a little later in the Western states, and finally in Boston, while at the same time he spent all his spare moments in the study of chemistry and electricity, and in experimenting on improved telegraph apparatus. It was during these years that he first turned his attention to duplex telegraphy, but through no fault of his own, he was unable to sell his invention, and the matter dropped for a time.

In 1860, when he was in his twenty-second year, he went to New York. He arrived penniless in the city; but he was a good telegraph operator, and was fearless of the future. And now a strange thing happened. He applied to the Gold and Stock Telegraph Company for work, and while he was waiting for a reply, part of the apparatus broke down. No one knew what was the matter, and everything was in confusion, until Edison said he could set the machine at work again. Permission was given him to try, and at the end of two hours, work in the office was going on as if nothing had happened. Edison was asked if he would accept a position at a salary of three hundred dollars a month, and needless to say, he accepted.

His new position gave him money and leisure for new inventions. In a little

over a year, he sold his telegraph inventions for a large sum of money. This enabled him once more to set up in business for himself. He built a factory in Newark, New Jersey, for the manufacture of telegraph apparatus, and since then his chief business has been that of making inventions.

The first great invention was the quadruplex system of telegraphy, about which you have read in the story of the telegraph. About the same time Edison made an improvement in the transmitter of the telephone which made it easier for the voice waves to travel, and improved the usefulness of the telephone very much.

It was just about the same time that he invented the phonograph. The idea of an instrument which would "write sound" and reproduce it, had been thought of before, by scientists, though it is doubtful if Edison knew of their efforts to make such an instrument. At any rate, he was the first to make an instrument which would work, and even he did not know that it would work until he heard it repeat the words that he had shouted into it. He says himself that when he put the reproducer in place and the instrument shouted back to him the words "Mary had a little lamb," he was never so taken aback in his life.

Edison patented his invention, which from the first excited the wonder of the world. Of course, like all first things, it was crude, and the sounds that it gave back were harsh. For the time he had to lay it aside, for other work pressed, but others took it up, and from his parent idea the gramophone, dictaphone and other instruments were invented. Later on, when he had more leisure, he commenced work on it again, and worked out a very perfect instrument which gives back every beautiful vibration from voice or instrument. The dictaphone, as you know, is a little instrument into which busy men and women dictate letters or documents or directions for work. Then the dictaphone operator causes the instrument to send the stored up sound waves into her ear, and from its dictation the letters or instructions can be written.

When electricity was first used for illumination, only large arc lights were used. The lamps sputtered and scattered sparks, and the light was so harsh that it could be used only for street lighting and large buildings such as factories, drill halls and

the like. Such a thing as incandescent lights, which make possible the use of softly shaded lamps, or indirect lighting in our homes or the brilliant illumination of churches, concert halls and theatres, was not even thought of. This was the work for which Edison put aside the work on his phonograph. He believed that a number of lights could be supplied from one distributing wire, and he believed that the light could be improved so that its use would be a common thing, so he invented the incandescent lamp, and the system of circuit lighting of which you may read in the Story of American Inventors. He spent a couple of years over this work, and to perfect his system improved dynamo machines, and invented a whole scheme of distributing electricity so that it might be used for light, heat and power. The result is that you may sit on your veranda and read by a lamp lighted by electricity, the power for which has been generated perhaps at a waterfall miles away, and the same power sends electricity to work and light mills and factories, drive railway trains, and light the streets of villages and towns that would otherwise be dark.

Once his work on the incandescent lamp was on the way to success, Edison turned his attention to another great project, that of driving railway trains by electricity. He was not the first man in this field, but his work aroused interest in it, and his inventions are largely used.

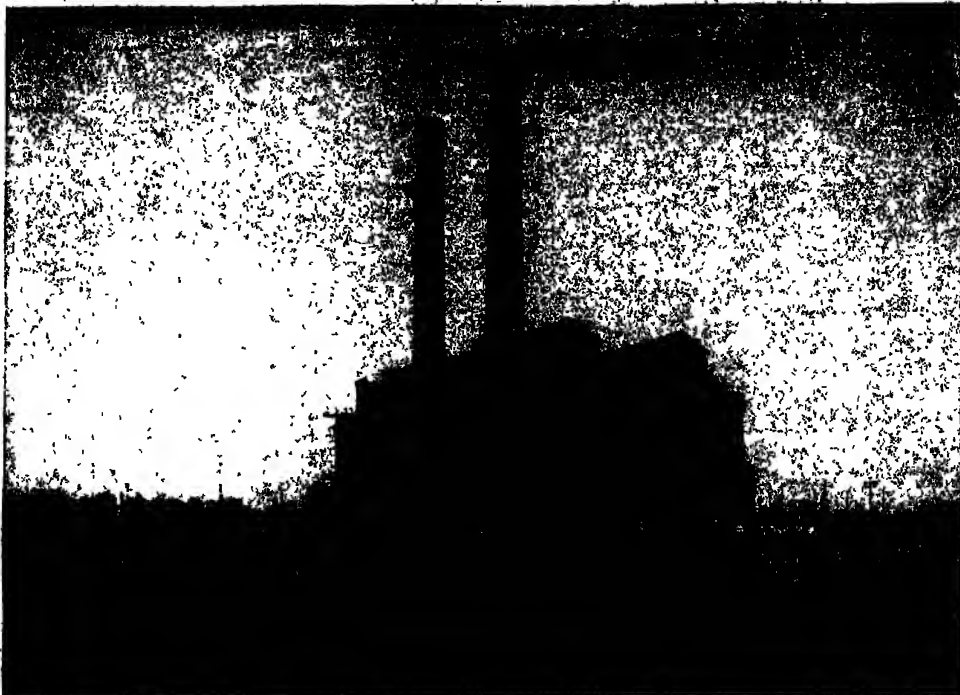
Now we come to the moving pictures, where again Edison took up an idea which others had had before him. From the story of the motion pictures, which is told on page 5135, you may see that while it cannot be said that he invented the moving pictures, the invention on which the moving pictures are based is his.

These inventions are only a small part of the work done by this wonderful man. He has invented a new storage battery, giant rolls to crush rocks, a kiln for use in making Portland cement, and numbers of other things which he needed to help him in the larger work in hand.

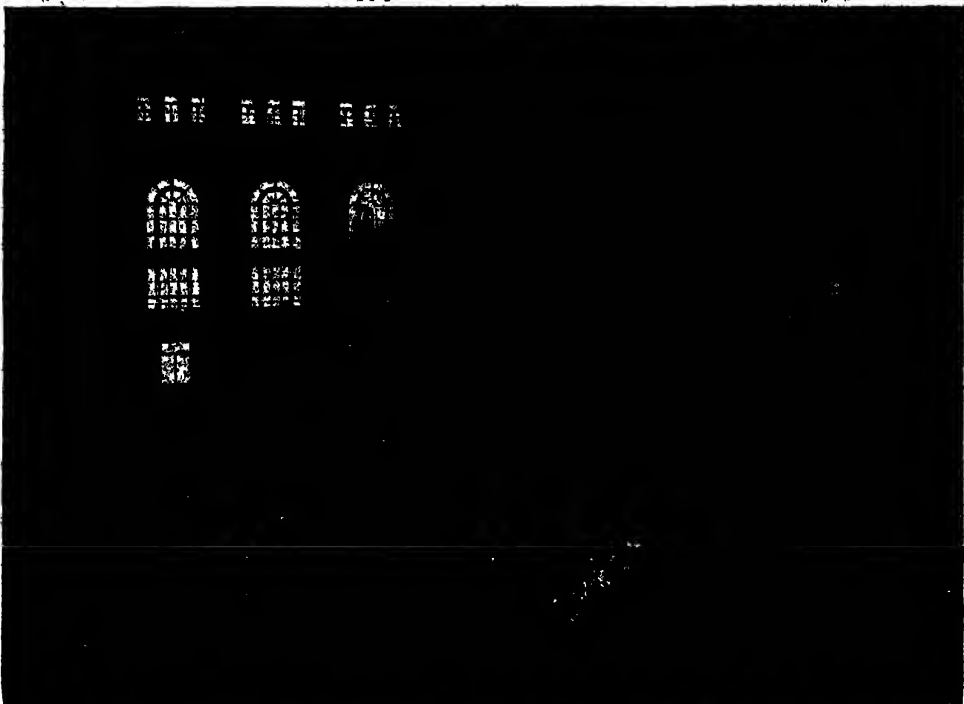
After the Great War commenced he found himself in danger of being cut off from his supply of carbolic acid for his factories at St. Lawrence, New Jersey, so he devised a way of making it for himself, and also for making the benzol from which the carbolic acid is produced.

THE NEXT STORY OF MEN AND WOMEN IS ON PAGE 6363.

WHERE ELECTRIC POWER IS GENERATED



Trains entering and leaving the Grand Central Terminal in New York are hauled by electric locomotives, which we show you in another place. The power is generated miles away in large power houses. This is the Port Morris station on Long Island Sound, so located because coal can be easily and cheaply brought to it, and there is also an abundant supply of water to condense the steam from the many great boilers.



Each of these large turbo-generators can develop about 7,000 horse power. The current is sent by cable to substations, which deliver it to the third rail, which you see beside the tracks. Mr. Edison did some important work on the use of electricity in transportation, but his attention was turned to other things. Pictures by courtesy of the New York Central Lines.



Jack's voice-box, with covering partly removed to show changing of position of vocal cords. First picture shows an opening for breathing, the second the cords forming chink for singing high note.

JACK'S WIRELESS TELEPHONE

THE BOX IN WHICH HE KEEPS HIS VOICE

WE remember that, as the air went down to ventilate Jack's house, it had to pass through a very narrow place, which was opened to let it go through. That opening has no use at all, so far as the ingoing air is concerned, though it is true that Jack can make noises, and even speak, by means of his ingoing air; but that is very tiring to Jack, and still more tiring to the people who have to listen to him. The real business of this narrow opening, and the voice-box that holds it, is with the air as it comes back from Jack's bellows. This air, we remember, is warmer, and much moister, than it was when it was taken into the lungs or bellows; it contains less oxygen, more carbon dioxide, and just the same quantity of nitrogen.

Other creatures can make more noise, some of them can make much and more alarming noise, some of them can make sweeter sounds and can keep up their voices for a longer time than Jack can, but no other creature has anything to approach the voice-box of Jack's house for the



beauty and the variety and the expressiveness and the usefulness of the sounds it can produce. Perhaps, however, if the truth were told, the credit of this goes less to Jack's voice-box than to the wonderful group of head-servants who live in the upper part of his brain.

Now, before we describe this voice-box or larynx, we must understand what it really is, and what it enables Jack to do. We know already that his house, like some great office or hospital, has a magnificent telephone system of its own, by which all its parts can communicate with one another. We already know very well that this wonderful telephone system has millions of little batteries called nerve-cells, and that these nerve-cells communicate with each other, and with every part of Jack's house, by means of a wonderful kind of living wires which are called nerves. These nerves do undoubtedly play exactly the part of wires: messages run through them; they direct the course of the messages and keep the different kinds of messages to them-

selves. The nerves are definitely of two kinds—one carrying messages from Jack's brain only *outwards*, and one carrying messages only *inwards* to the brain. If these nerves are cut, the messages cannot travel.

But an office or a hospital not only needs its own private telephone system, but also requires some arrangement to enable it to communicate with the outside world. It requires a machine for sending messages, and it requires also another kind of machine, called a receiver, for taking in messages. Now, if an office or a hospital requires such arrangements, much more does Jack's house. Any other kind of house may get along by itself, but Jack's house cannot. It was made and meant to be one of many, all living together, and helping one another, and communicating with, and serving one another.

THE TELEPHONE THAT IS ALWAYS MOVING

It follows that the arrangements for sending and receiving messages are of the first importance in Jack's house; and here a difficulty at once arises. Ordinary houses are built to stand still where they are placed, and there is no particular difficulty in setting up machines in them with wires through which the occupants of the houses can speak to each other and be spoken to. But we could hardly have a telephone put into our house if it were constantly walking and running about, and might any day set out without warning to make a journey of a hundred or a thousand miles.

There are, of course, such things as wireless telephones, and people can talk to each other by means of telephones at great distances without wires, just as they can telegraph to each other. What happens is simply that the electric waves, which, in other cases, run along wires, in this case run through the air in an invisible kind of something we call the ether. This we consider exceedingly wonderful, but it is really one of the oldest things, and we all do it every day, although instruments for wireless telephony were invented only a very short while ago.

WHAT JACK'S VOICE-BOX REALLY DOES

Jack has in his throat a marvelous machine for making waves, which need

and have no wire, and with this machine he daily telephones—which means "sound afar" or "speak from a distance"—to the people around him, everyone of whom has the same kind of instrument; and he also possesses a much more wonderful receiver, called the ear, which catches these waves, and then sends an account of them to the brain by means of certain of the wires that go to make up the *inside* telephone system of Jack's house. Now we have some idea of what Jack's voice-box really does, and we can proceed to examine it and see how it does it.

Of course, it is not always in action—if Jack has any sense. Yet when it is not in action it must always be on its good behavior, for as long as Jack lives air must pass through it, whether or not it chooses to make use of the air on its own account.

This wonderful voice-box, or larynx, the message-sender of Jack's wireless telephone, is made up of a number of separate pieces of cartilage, or gristle, a firm, fairly stiff substance which is not bone, and yet is something like it. When Jack's house grows very old, these pieces of gristle are likely to get too much lime in them, and become more like bone than they should; and this is probably the chief reason why the voices of old people change, and become weak and shaky.

WHEN JACK'S BOX GROWS MUCH BIGGER

When these pieces of cartilage are put together they make a kind of box, which we can readily see and feel in the throat, and which is sometimes called Adam's apple, because of the stupid idea that it is the apple that Adam swallowed, which stuck in his throat. It is true, however, that this "apple" is much bigger and more noticeable in men than in women, and that is why men have stronger and deeper voices than women.

When Jack and Jill are children their voice-boxes are very small, but at some time in their teens their voice-boxes, especially Jack's, grow much bigger. This happens so quickly in Jack's case that, for a time, he loses control of his voice-box, and his voice is likely to break, and sound sometimes high and sometimes low without his meaning to make the difference. Also, if he has been a singer, his pure child-like high notes

begin to go, and gradually he gets deeper notes which he never had before.

When the voice-box has grown up, so to say, we can readily feel in our throats the largest of the cartilages, which projects forwards, and beneath it we can feel a regular, strong ring, which is the lowest of the cartilages, and supports the others.

But we can really learn nothing about this voice-box until we look inside it. In the middle of last century an inventive Spaniard, a great teacher of singing, called Manuel Garcia—who lived to be more than a hundred years old—thought he would like to be able to see the inside of his own voice-box, and he actually invented a little mirror which can be passed into the back of Jack's throat, and with which can be seen reflected the inside of the voice-box. Garcia invented this laryngoscope, or larynx-seer, because he wanted to learn about singing; but, somewhat improved, it has become a valuable invention for doctors, enabling them to save many lives and voices and relieve a very large amount of pain.

THE CORDS THAT HELP JACK AND JILL TO SPEAK

What we see with the aid of the laryngoscope is a pair of vocal cords. When these are quite well they are pale white to look at, and they move together, towards or away from each other, quickly and easily and equally; so that the space between them is always exactly in the middle of the larynx, and that means also exactly in the middle of Jack's house. If one cord were moving badly, the other would come across to try to meet it. Also, if Jack has been talking too much, or has been smoking too much—a very common reason—and also in people who drink too much, the cords are not pale white, but slightly reddish, and then the voice is husky, and soon grows tired.

The cords are made of pure elastic fibres, covered by a layer of smooth, flat cells. In front, as the picture shows, they are attached close together behind the front part of the big cartilage which we can see and feel so easily.

But each of the cords is attached behind to a corner of a little separate piece of cartilage, and each of these pieces of cartilage is so posed that it can rotate and twist upon itself. When it

twists in one direction, it carries the end of that vocal cord towards the middle of Jack's throat, to meet the other cord. In health, both cords always move at the same time, and so in this case the cords will almost meet—not quite, but very nearly. Every time Jack speaks or sings, this is the first thing he does; and if he cannot bring his cords close together like this he has lost his voice, and can only whisper.

WHEN JACK SHOUTS AT THE TOP OF HIS VOICE

But when the piece of cartilage that carries the back end of its vocal cord twists on itself in the other direction, it carries the cord away from the middle, and away from its fellow. Both little cartilages do this at the same time, and now what was before a narrow chink becomes a triangular opening that readily lets air through in either direction, without producing any sound.

Our business now is with what happens when Jack puts his vocal cords together as the air is coming out of his chest. In the first place, he does not content himself with letting the air come out by the elastic recoil of his stretched lungs and ribs and muscles, as he usually does. That would not give him enough force for his purpose. On these occasions he makes a "forced expiration." By contracting the muscles of the ribs and calling on the great muscle named the diaphragm for assistance he expels the air with great force through the narrow passage in the voice box. To get enough outgoing breath to do this, Jack and Jill must learn to fill the lower part of their lungs very full of air.

THE WAVES THAT SPREAD IN ALL DIRECTIONS

But to be able to make a loud sound, Jack must do even more than all this. Not only does he bring his vocal cords together, but he also deliberately makes them tight. The cartilages to which their back ends are fixed sit on the top of the ring cartilage, which is shaped at the back exactly like a signet ring, and has a wide space for them to rest on. Now, when Jack thinks fit, he can tilt these little cartilages backwards so as to make his vocal cords tight; and then, if a current of air is pressed hard and suddenly against them, they have no choice but to vibrate, or tremble, like

any tight string you might pluck with your finger.

Thus Jack's wireless telephone produces air-waves — commonly called sound—which leave his house, and may be picked up by any receiver, such as the ear of a man or an animal, or the receiver of a phonograph. These waves, like the waves of other wireless telephony or telegraphy, spread in all directions, and cannot be directed beyond a slight degree, because there is no wire to confine them.

THE TINY THINGS ON WHICH THE BEAUTY OF SPEAKING DEPENDS

The pitch of the sound depends on the number of waves produced in a second, and that depends entirely on the tightness of Jack's cords. It differs in different people, because some have heavier and longer cords, and these will always vibrate more slowly, and make lower-pitched sounds, however tight they may be pulled. But, in any particular case, the higher notes will be produced when Jack tightens his cords, and the lower notes when he relaxes them. He does so all the time, when he is speaking or singing. Listen to anyone speaking, and you will hear how the pitch of his voice rises and falls, differently at different times; so that, for instance, you could tell by the change in pitch that he was asking a question even if he were using a language that you did not understand. Half the beauty and interest and expressiveness of speaking and reading aloud depends on these changes of pitch—which depend on the use of a tiny pair of muscles, and a special pair of nerves. Men who speak in public ought to pay as much attention to the way they use their voices as singers and actors do.

HOW EVERY PART OF THE HOUSE HELPS JACK TO SING

In great singers this power is marvelous. They can control the pitch of the voice within wide limits, at their will. They can maintain the clearness and beauty of the tone equally when they are singing so softly that the note sung is like a far-off whisper of fairy sweetness, and when they are producing a great outburst of sound; and they can alter, also, the quality of the tone in order to express different kinds of feeling.

But 't is not to be supposed that the

voice-box itself, without any help, is equal to all this, much less to producing words. On the contrary, every neighboring part of Jack's house is called on for aid. When he speaks or sings deep and loud, he can feel his whole chest vibrating and helping to make the sound what it is. His whole throat is at work, too. Indeed, unless he has been properly taught to sing, he is in danger of using his throat too much, or using it in the wrong way, and in that case he may produce sounds that make us say that he sings "out of tune." His tongue is always at work, either lying low and smooth in the floor of his mouth, or moving about to make the vowels or consonants. His lips are at it, too, as deaf people know, when they learn to read the lips because they cannot hear. His soft palate, at the back of the roof of his mouth, rises and closes the back of his nose, so that he does not produce a nasal tone; and in good singers, when they sing high and loud, if we put our fingers on their nose or cheek-bones, we can feel them all vibrating and helping the sound, just as the chest does with the lower notes.

THE MACHINERY THAT WORKS TO PRODUCE LANGUAGE AND MUSIC

All this complicated machinery works with exquisite ease and skill and harmony whenever we speak or sing properly, and it produces either the universal language called music, which can express things, like joy or sorrow, that all can understand; or else it produces a special set of waves—and interruptions to the waves, which are called consonants, like p and m and t—which form a code or set of signals, called a language, just like the code used in ordinary telegraphy. Our native language seems "natural" to us, because we grew up with it; but really it is a quite artificial code, and we show this when we criticize any code we don't understand—though it is probably just as good as ours—and call it "gibberish." The only exception to this is that a few words in all codes are not really artificial, but are more or less imitations of the natural sounds—such words as whisper, and buzz, and tinkle, and coo, and so on. And we now have some idea of Jack's wireless telephone, its exceedingly great wonder, and the beauty of the way in which it works, although only a very small part of it has been described.

The Book of FAMILIAR THINGS

WHAT THIS STORY TELLS US

THE complicated lock of the present day is very different from the simple lock of a thousand years ago. The locksmith was an important man in the Middle Ages and made some wonderful locks, though they cannot compare with the locks of the present day. In our times the burglar and the locksmith are waging constant war, and the locksmith is making better and better locks, because the burglars have grown more and more skilful. The best locks of the present day afford almost perfect security, but some intelligent burglar may discover some method of opening them. We show you in the pictures some of the simplest forms of locks and also some of the more complicated. The best lock of these days is an interesting bit of mechanism, and the great vaults look as if they were too strong for any thief.

HOW A LOCK IS MADE

THE lock was probably the first invention of man when he had become sufficiently civilized to desire to keep things. Before that, a hollow tree, a cave, a hut of branches were his dwelling, the skin of an animal protected him when cold; his food supply was drawn from the wild animals and fish in the woods and streams. When supplies ran short he could easily move, for there was nothing to move but his own body. There was nothing worth stealing and so there was no idea of property rights.

But he moved a step upward—he became a herdsman, a shepherd, a farmer, a mechanic in a rude way. He acquired pots, pans, kettles, weapons, tools, and all of them took so long to make that he valued them, and then there came to him the idea that he must invent a way to keep secure these things when he had to be away from his dwelling place, or was asleep at night. *The lock* was the result of his idea.

This was probably not more than 5,000 years ago, for the oldest traces that we have of locks are among the early Egyptians, and the next in order are of Chinese origin. There has been a great improvement in locks during the past hundred years, and to-day, in our country, the catalogues show more

CONTINUED FROM 6317

than sixty-five different kinds, each of these being for a special purpose. Thus we have air-locks, automobile locks, barn door locks, keyless locks, padlocks, car and switch locks, safe deposit locks, combination safe locks and many others.

At first the Romans and Greeks had very simple safeguards. A leather thong tied in curious knots around the handle of the door was the only lock, the knack of unloosing it the sole key. Then bars or bolts were used, and we can find in old writings how the ancients invented devices for controlling them. A leather thong with a loop or a hook on the end was inserted through a hole in the door, and this would move the bolt in the manner required. So the bolt was a rude lock in the same degree that the thong was a rude key. Later in their history they had real locks and keys, for keys and traces of locks have been found in the ruins of their camps and cities.

Some of the locksmiths of the middle ages did very beautiful work and made ingenious structures which, however, could not resist master keys, picks or shelter keys in the hands of skilful workmen. Some of these Middle Ages locks for great buildings are monsters in size, with keys two or three feet

long. Some, made with crude hand-made tools, are beautiful miniature locks with keys no more than one-half inch in length.

THE LOCKSMITH AN IMPORTANT FIGURE IN THE MIDDLE AGES

In the sixteenth century, in Germany, Italy, France and England, the locksmith was a very important figure. He was an artist in bronze, iron and copper, his secrets were carefully guarded, his apprentices numerous, and distinguished by a special dress. Only a few of his locks have been preserved to us, but there are fine collections of keys in the museums of Europe, and from these we can grasp the nature of the lock and the beauty of its design. Little figures, escutcheons and armorial bearings, ornaments and piercings transform our little insignificant "opener" into an object of art. The day of factories had not dawned, and every lock and key was hand-made, and called for the devoted skill and patience of the master-locksmith or clever apprentice. Gone were the large sickle-shaped keys of antiquity, born on the shoulder of warden or slave. The lady of the house wore the keys of still-room, linen-chest, and plate closet, suspended from her girdle as an ornament, as well as an essential part of her dress.

Ornamental locks and keys are sometimes used to-day, but they are generally copies of those made in the sixteenth century, and, except for their mechanical difficulty, not superior in any way to these. The medieval locksmith devoted his skill to the ornamenting and elaborating of his locks; he did not make them secure against robbers. With the growth of banks, the increased use of money, the greater accumulation of wealth, due to the invention of machinery, strong need arose for greater means of security.

THE GREATEST OF THE MODERN LOCKSMITHS

In the first half of the nineteenth century was laid the foundations for the wonderful development of the lock-making industry which has taken place in the last fifty years. Perhaps the most widely known name in this trade is Yale. Linus Yale, Sr., started as a lockmaker about 1840. He made a brilliant record as a maker of bank locks, and died in 1857, after making his mark upon the trade. Then came Linus Yale, Jr., who invented the famous pin-tumbler locks,

which are known all over the world. In this lock Yale went back to the ancient Egyptian lock for his principle, and made a small flat key instead of the cumbersome keys previously used. Many other improvements were made by Mr. Yale, who may be called the greatest of modern locksmiths.

No matter how difficult a lock may be, there is always a point of danger in the keyhole. Many devices to hide the keyhole, and even to take the place of a lock proper, have been tried, but the only one in general use is the combination lock. This is a lock in which the arranging of the internal parts in their proper positions is done from the outside by merely using numbers or letters in their right order. These numbers show on a disk which is usually marked up to 100. In this case the only key is a secret, which is to use the right figures in correct order.

These improvements made the combination lock almost unpickable. But still there was a secret, which, if known, would open the lock, and burglars used to force by torture the possessor of this secret to give it up. This was the origin of the famous masked burglars, which resulted in robberies amounting to millions.

THE TIME LOCK WHICH GUARDS THE VAULTS

Then the inventors took another step and produced the time lock, which can only be opened at certain hours. Still the burglar found a way of introducing liquid explosives into the space surrounding the lock spindles. Many burglaries were committed in this manner.

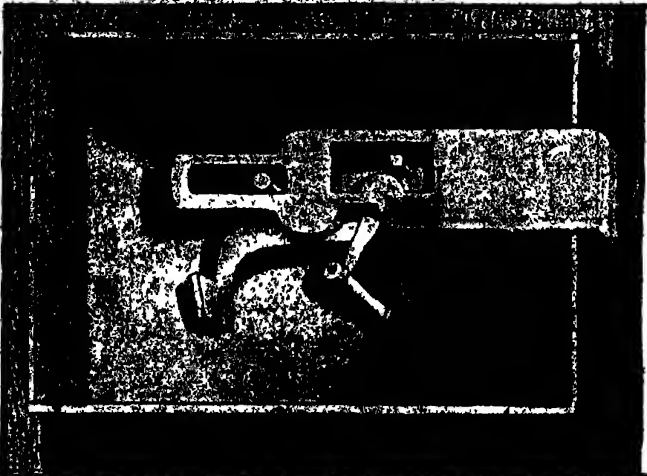
The problem was to make the introduction of these explosives impossible, and to do this the spindle-holes had to be done away with. This is done by a motor device working with a time lock. The motor throws the bolts and draws them back according to the setting of the time lock. And the door of the safe is as secure as any other part of it. The only way to overcome it is by such force as will destroy the whole structure.

We have to-day locks of many kinds, and it seems that the manufacturers have made our treasures secure. It has come to be a contest between the burglar and the locksmith, each trying to overcome the other. The locksmith seems to be gaining, for his locks are much more difficult to pick than those of former times.

THE NEXT STORY OF FAMILIAR THINGS IS ON PAGE 637.

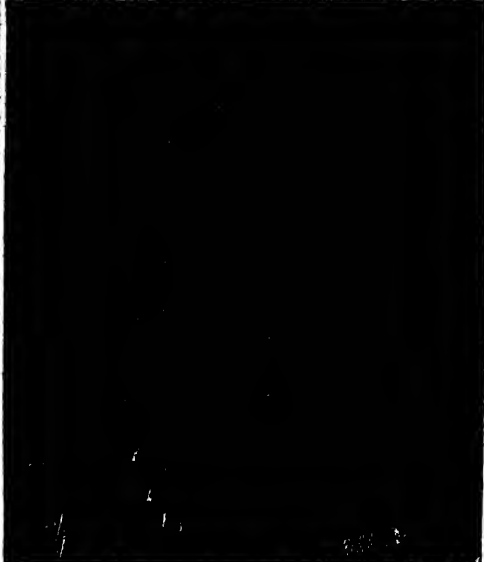


Locks are as old as civilization and were first made of wood. It was in the reign of Alfred the Great that locks were first manufactured in England, but there was little improvement in their construction until the end of the eighteenth century. Since that time there have been marvelous developments, until we have the elaborate and costly locks shown on other pages. Here we see how the common tumbler lock works. This is the ordinary cheap lock found on cupboards and drawers. As shown in this picture, a metal "tumbler" works on a pivot. A stud, B, projects from the tumbler and fits into a notch in the bolt, preventing the bolt from moving either way. But when the key is turned, as seen in picture 2, the "bit," or flat part of the key, lifts the tumbler and enables the bolt to be pushed along as seen in picture 3. As soon as the key is turned right round the tumbler falls, its stud fitting into a second notch in the bolt and holding it firm. Picture 4 shows the wards, or projections, which prevent any key but one specially cut to fit the lock from turning round, and in picture 5 we see how the right key can be turned over the wards.



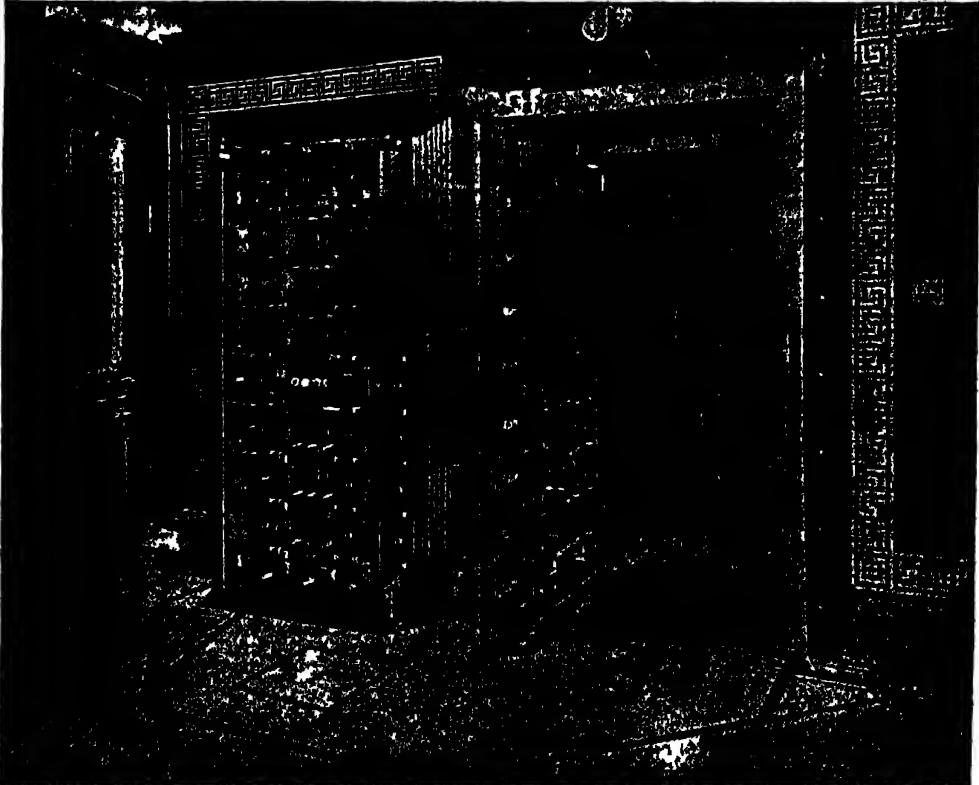
THESE PICTURES SHOW THE INSIDE OF THE LOCK OF AN ORDINARY DOOR

DOORS THAT COST THOUSANDS OF DOLLARS



Our great-grandfathers kept their treasures in a strong box made of wood bound round with iron. To-day a skilled burglar would laugh at such a treasure-store, and we build wonderful burglar-proof and fire-proof steel vaults, with doors like that shown in this picture, that often weigh more than twenty tons each.

Sometimes the doors are round in shape. They have a marvelous system of bolts and fastenings, and the lock can be set to open at a certain time in the future. If once the door is locked, no human power can unlock it till the fixed time arrives. At the exact hour certain levers fall, and then the door may be opened.



Here is one of the strongest doors ever built. It is a double door—that is, the door seen on the right closes and then the one on the left is shut over it. This door cost more than five thousand dollars. The key has a dial upon it with a number of letters that can be arranged in thousands of ways. Once the door is locked, it cannot be unlocked unless the letters on the key are arranged exactly the same as they were when the door was locked.

WHERE MILLIONS ARE SAFELY KEPT

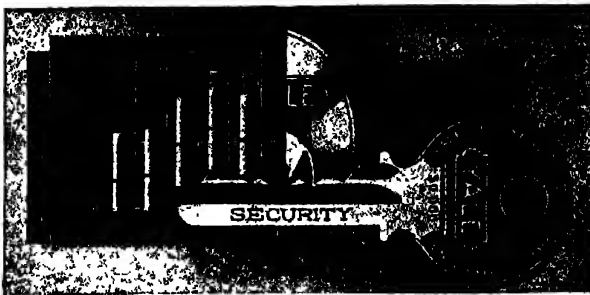


This is the outer door of one of the largest and safest vaults in the world. The great door weighs forty tons, yet swings easily upon ball bearings. Notice the great bolts around the rim which shoot past the rim. The tube to the right is a telescope through which only the person working the combination can see the dial, which is well-protected. The combination is worked by means of the wheel beside the box.



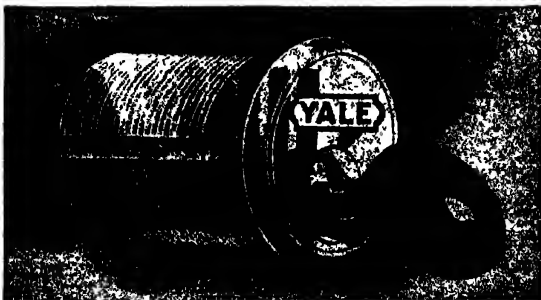
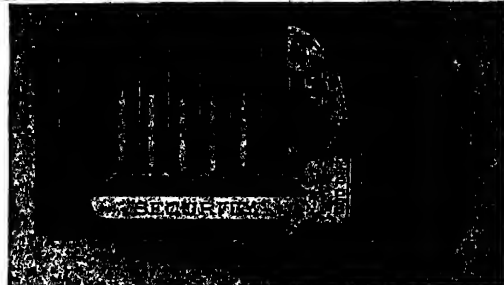
Here is the inside of the underground vault, the door of which we saw above. To the right and left are hundreds of boxes which are rented to those who wish a place in which to keep their papers, jewels and other valuables. Some boxes are opened by combinations and some by keys, as shown on other pages. Pictures by courtesy of the Guaranty Trust Company.

HOW LOCKS WORK IN HOUSE AND BANK

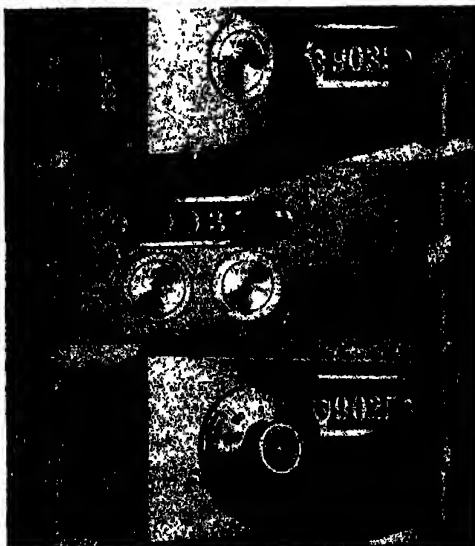


This picture shows a lock cut through the middle. Inside the lock are several little steel pegs of different lengths, called pin-tumblers, made in two or more parts. When the key is cut they are pushed toward the bottom by the springs, and as part of each is in the outer cylinder and part in the inner, they will not allow the inner cylinder to turn around. The bolt is attached to the inner cylinder and moves with it. Let us push in a key and see what will happen then. It is easy to find a key which will slide into the key slot even though it was not made for that particular lock. The keys look much alike.

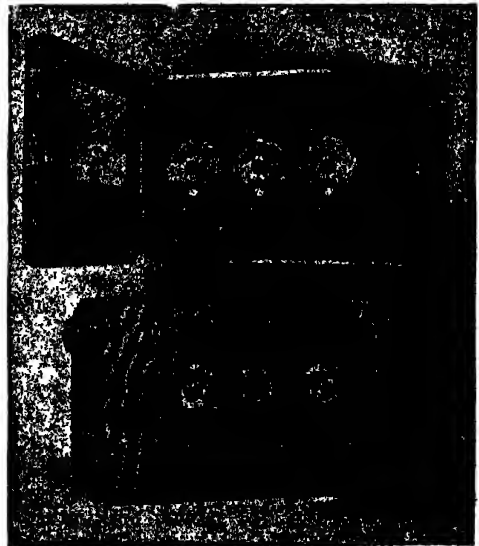
Here we see the proper key pushed all the way in. Notice each one of the little pins has been pushed up toward the top of the lock. Notice, too, that the division in each little pin comes exactly at the line between the inner and outer cylinders of the lock. You can see that a twist of the key would turn the inner cylinder inside of the larger one. The end of the cylinder away from the key is connected with the bolt and turns it. But if one of the notches in the key were a little deeper or a little shallower, one piece of the pin would be partly in one cylinder and partly in another and would not allow the inner cylinder to turn. A difference of one-fiftieth of an inch in the position of one pin will prevent the cylinder from turning.



This is how the lock would look if it were made of glass. You can see the inner cylinder turning, and can see the ends of the pin-tumblers as they are being turned inside the outer cylinder. The bolt is moved by the projection at the rear, which you see turning. It is very easy for the manufacturers to make the length of the tumblers or the depth of the notches just a little different. They say that 27,000 locks are made so that no key will unlock more than one. In the next 27,000 locks there is also one which your key will open, and so on. If you were to try every lock you saw you might find one your key would unlock, but it would take a very long time, and you might never find the duplicate.

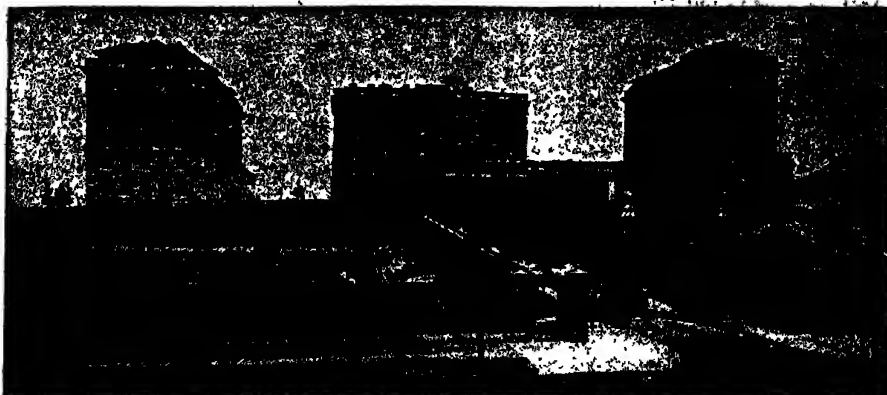


Many people have a box in a safe deposit vault, such as we saw on another page, in which they keep valuable papers or jewels. The boxes are made of steel, and are easily drawn out when the doors are opened. Some of the doors require two keys, and some have combination locks.



A time lock is placed in the inside of a safe door. It can be set to open any number of hours after, and until that time has come, no one, even if he knows the combination, can open the door. Each of these dials can open the door. There are three for safety, as one might possibly get out of order.

The Book of MEN & WOMEN



Rockefeller Institute, A Home of Scientists.

SCIENTISTS WHO HAVE SAVED LIVES

IN the olden days students of medicine studied with practising physicians. Often these students were college graduates, but often they were not, and when laws were made declaring that all students of medicine should attend a medical college, too often the teaching in these medical colleges was very narrow. The fact of the matter was that all it was thought necessary that a student of medicine should study was anatomy, the symptoms of diseases, and the medicines needed to overcome the ravages of illness. Most of them, of course, were what we call cultivated men. Many of them were learned in subjects which did not seem to have much reference to the science of medicine; but this was not thought necessary to their usefulness in their profession.

A change from this way of thinking came in the nineteenth century. In our day a student of medicine knows that he must study the laws of every science that has to do with life in any form, no matter how lowly. Moreover, the best doctors have learned to believe that the chief use of medical science is to teach people how to obey the laws of health so that they may keep well. In other words, they believe that it is easier to prevent illness

CONTINUED FROM 6351



than to repair the hurts that it has caused. Before they came to this point, doctors had to learn the cause of illness. The men of whom we have told you in the Story of Great Doctors, learned a great deal about the

anatomy of the human frame, but they did not know much about the causes of illness, and the story of those who learned how to gain this knowledge is the story that we shall tell you here.

LOUIS PASTEUR, WHO LEARNED IMPORTANCE OF MICROBES

Strangely enough, Louis Pasteur, the man who first found the pathway to this new knowledge, was not a doctor of medicine, but a chemist. He was born in a little French town called Dôle, in the valley of the Saône, where his father, who had been a soldier in Napoleon's army, had settled down to his work as a tanner. While Louis was still very young, his father and mother moved to Arbois, where there was a good school, which he attended. Afterward he went to the college of Arbois, where the director advised him to prepare for the great École Normale, or normal school, at Paris, so that he might become a professor in one of the great colleges in France. His father and mother were determined to give him all the advantages they could, and when he was

sixteen, Louis was sent to Paris to prepare for the École Normale, but he was so homesick that he fell ill, and had to go home again. Then he went to the Royal College at Besançon, where he took his bachelor's degree in literature. After he took his degree he was made an assistant teacher in mathematics, and while he taught, he prepared for the examination necessary to admit him to the École Normale. The professor in chemistry at Besançon, who was an enthusiast in his science, roused Pasteur's interest in it. However, when he went up for his examination at the École Normale, he only got a pass on his chemistry examination, and was so little satisfied with this that he refused to accept it. He went to Paris for a year's study, entered for the examination again the next year, and this time his name appeared fourth on the list. During this year of study, the influence of J. B. A. Dumas, whose lectures he attended at the Sorbonne, induced him to devote himself to chemistry. He entered the École Normale in 1844 and three years later took his degree in physical science.

In Paris, where he was appointed assistant in the laboratory at the Sorbonne, he made his first great discovery. A chemist, named J. B. Biot, had made experiments which led to discovery about the effect of light on the crystals of tartaric acid, and Pasteur, in his study of the crystals completed the discovery and finished the work that Biot had begun. The discovery was very important, and when the experiment was carried out in his presence, Biot cried out, "My dear child, I have loved science so well throughout my life that this makes my heart beat fast."

As a result of this discovery of what he called left-handed tartrates, Pasteur was made professor of chemistry at Strassburg, and soon afterward he married Mademoiselle Laurent, who made him very happy in the life that they spent together. It was a very busy life, for the young professor constantly lived up to his motto, "Travailler, travailler, toujours"—"Work, always work." A few years after his marriage he was made dean and professor of science at the University of Lille, and though he had much teaching to do, he still went on with his search after the true answers to puzzling questions. One day he paid a

visit to a brewery at Lille, and while he was there he became interested in the question, "Why does beer turn sour?" It was a question which had puzzled many wise men for centuries, but Pasteur answered it. We cannot possibly follow him through all the steps that he took, and the long hours that he spent in his laboratory before he found the answer. It is enough to say that, helped by the experiments he had already made with tartaric acid and fermentation, he found that beer and wine and milk are turned sour by the action of living organisms called microbes, and that these microbes swarm in the air around us. "Keep your air free from microbes or keep the microbes from your vats," he said, "and your milk and wine and beer will not turn sour."

He was now recognized as one of the greatest chemists of his time. He was appointed to an important post in the École Normale, and later on he was made professor of chemistry at the Sorbonne. Meantime he found out the nature of the disease among silkworms that had almost destroyed the silk industry in France; and he discovered the microbes which cause cholera, which was exterminating French poultry, and the disease called anthrax, which is fatal to sheep and cattle. Up to this time the disease called rabies in dogs was a cause of terror, for the bite of a dog that is ill with rabies is certain to produce hydrophobia in man. Pasteur became certain that this illness, too, was caused by a microbe, and did not rest until he found the microbe and discovered a way to make a person who had been bitten, proof against the ravages of this deadly little form of life. A campaign against rabies was immediately begun, and the disease has been almost wholly stamped out in some countries.

Pasteur lived to the age of seventy-three, and when he died in 1895 he was buried in the grounds of the Pasteur Institute, which had been founded for the treatment of hydrophobia. There is also a Pasteur Institute in New York, but happily there are now few cases of this dreaded disease for treatment in the United States.

Up to the time that Pasteur discovered the part played by microbes in the fermentation of beer, many had believed that it might have been caused by spontaneous generation, which meant that

life could come suddenly into being without cause. Pasteur's discovery quite upset this theory and set the whole scientific world talking, but only one man, Joseph Lister, saw what it meant to human life.

JOSEPH LISTER, WHO FOUNDED MODERN HOSPITAL TREATMENT

Joseph Lister, whose father improved the microscope, was born in Upton, near London, in 1827, and was five years younger than Pasteur. His family belonged to the Society of Friends, and the

this suffering, but except in maintaining greater cleanliness, he had made little progress, when he heard of Pasteur's discovery of the microbes that cause fermentation. That gave him the clue that he wanted. He had already come to the conclusion that hospital gangrene was caused by microbes, and study with his microscope showed him that this was the case. When he went to Glasgow, "hospital gangrene" was raging, and he set himself to stamp it out. Pasteur's discovery taught him that the microbes



Louis Pasteur in his Laboratory.

youth was educated at their schools and at University College, London. He took his degree of B.A. at the University of London, and stayed on at his college until he had taken degrees in both medicine and surgery.

When, as a young house surgeon, he went into a London hospital, he was appalled by the number of deaths that came from "hospital sickness," or gangrene. As we have told you in the story of the Great Doctors, a large percentage of patients died, who had undergone successful operations, and all the surgeons were in despair. Young Lister believed from the first that some means could be found to stop the cause of all

which cause gangrene could not grow in a wound unless they had been carried there. At first he believed that they came from the air, so he searched for an agent which would exclude air from wounds, and for this purpose he at first used carbolic acid to form a crust over the wound. Carbolic acid is a powerful antiseptic. It kills microbes and destroys the poison that they produce. But its action on flesh is very severe, and although by its aid wounds were healed without danger of gangrene, it left ugly scars. Therefore, instead of applying the acid direct to a wound, Lister began to use it as a spray, and through various steps he was led to the belief that the use of carbolic acid

was not necessary. He learned that the microbes in fresh, pure air do no harm to a wound; it was the microbes carried to it from the hands, the clothing, the bandages or the instruments used in an operation that did the mischief.

Thus he laid the foundation for what is called aseptic treatment. That is, antiseptics, or microbe-destroying substances, are not applied direct to the wound. They are sometimes used on dressings, and by their use, and the use of great heat, sponges, bandages and instruments are made sterile.

From Glasgow, Doctor Lister went to Edinburgh University, where he succeeded Professor Syme. He stayed in Edinburgh for about ten years, and was then called to the College of London, where he was professor of surgery for nineteen years. In 1896, when he was an old man, he gave up his professorship; but went on with scientific study to the end of his life. Some time before he retired, he was made Sir Joseph Lister; a short time afterward he was made Lord Lister, and in 1895 he was elected president of the Royal Society, an honor that is shown only to the most distinguished men of science. He died in the year 1912, at the age of eighty-five.

THE MAN WHO FOUND X-RAYS

If you break your leg or your arm, or hurt yourself in some other way in the playing fields or gymnasium, the doctor will probably have an X-Ray picture taken so that he may be able to see what injury has been done to the bone, or if you have an aching tooth, the dentist will probably have an X-Ray picture taken to find out why it aches. These X-Ray pictures are wonderful things, but they have become so familiar to us that we have almost ceased to be curious about them. We are still less curious about the man who discovered the X-Rays. Nevertheless, he was a great scientist, and he has helped the work of doctors so much that he has a place here.

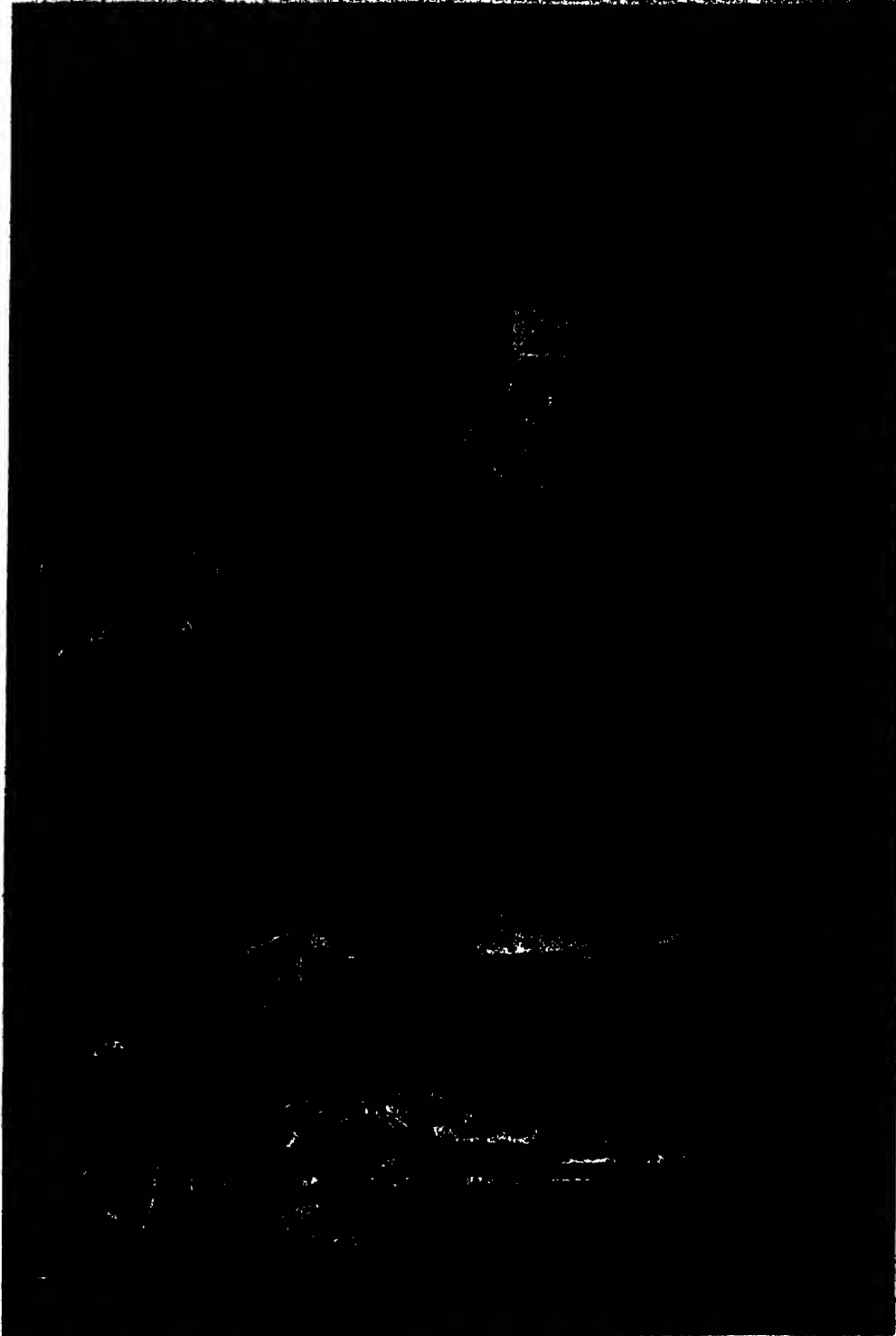
William Rontgen was born in Germany, in the year 1845, but was educated in Holland and at the University of Zurich, where he received his doctor's degree at the age of twenty-two. At the university he had turned his attention chiefly to chemistry, and soon made a name for himself in this branch of science. After he took his degree he taught at

the universities of Wurzburg and Strassburg, and in 1879 was made professor of physics at Wurzburg. It was at this university that he made his great discovery. One day after he had been experimenting with a Crookes' tube, he found that he had photographed a key which had been enclosed in a book. This discovery led him on to many more experiments, and the result of his work and study was a knowledge of how to produce the X-Rays that physicians and surgeons rank next in importance to the knowledge of anaesthetics and antiseptics. They are used to treat some kinds of growths on the body which are very like cancer. By their use the doctors can tell whether a badly swollen limb has been broken or has only had a lesser injury. They can find out just how much harm has been done to the lungs by tuberculosis, and by making a patient swallow a particular drug which the rays will not pass through, they can in some way find out whether an illness, such as cancer, has injured the stomach or other parts of the body. The rays will show whether or not a bullet has lodged in a wound, and perhaps no one person can imagine all these mysterious rays have done to lessen the pain of treating the wounds received on the dreadful battle-fields of Europe.

DR. ROBERT KOCH FOLLOWED IN PASTEUR'S STEPS

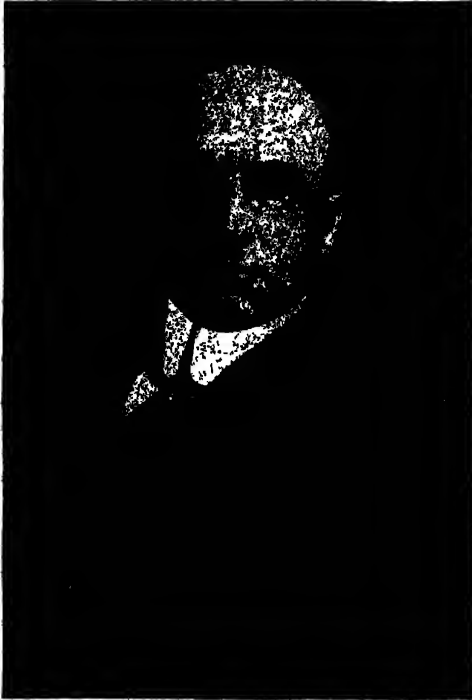
One of the greatest of the men who followed in Pasteur's footsteps was Dr. Robert Koch, a German scientist, whom we know best in this country perhaps by his efforts to overcome the plague of tuberculosis. Doctor Koch was a native of Hanover, and was born in the town of Klausthal, in 1843. He studied at the University of Gottingen, and some time after he took his degree, he went with the German army to France during the Franco-Prussian War. When the war was over he settled down as a country physician. But as he rode about over the rude country roads to see his patients, his mind was busy with many things. He took up Pasteur's work on anthrax and spent many a long evening over his microscope. Pasteur, as we have read, had discovered the microbe that caused anthrax, and learned how to prevent the disease. Koch learned the whole life history of the microbes, and thus taught scientists how to study all microbes.

THE MAN WHO SAVED MILLIONS OF LIVES



It is probably no exaggeration to say that Lord Lister, the great English surgeon, saved millions of lives, for without his wonderful discoveries many of the operations that are performed in the hospitals of the world would result in death. He showed how the fatal poisoning of wounds, which nearly always followed operations before his time, could be avoided, and the whole world honors him for his splendid work.

He also did many things which it is interesting to us all to know. He discovered the microbe that causes cholera, the microbe that causes tuberculosis, and found out a way of preventing typhoid. After he had been made a professor in the Berlin University, men from all over the world went to study with him, and many of his students are now carrying on his work. One of these, a Japanese named Kitasata, found out the microbe which causes the bubonic plague, from



Dr. Alexis Carrel.

which so many millions of people have died in Eastern Asia, and which was responsible for what is known in European history as the "Black Death" of the Middle Ages. Doctor Koch went to Egypt to study cholera, and to East Africa to find out all he could about sleeping sickness and a cattle disease called rinderpest, of which we have read in another place, and he went to India to study the plague. He died in the year 1910.

DR. THEOBALD SMITH HELPED THE WORK OF PREVENTING DISEASE

He was helped in his work in typhoid and tuberculosis by the patient researches of Dr. Theobald Smith, who has done so many things and given so many ideas to other men that he might be called the

"Scientist's Scientist." Doctor Smith was born in the city of Albany, in New York State, in 1859. He went to Cornell University, and after his graduation there he took his degree in medicine at the medical college in his native city. The next year he received an appointment, from the Federal government, in Washington, and after a while was made a professor in a university there. While he was at Washington, he found out a great deal about cholera in hogs, and the result of his study laid the foundation for all that Koch and other men afterward discovered about the prevention of diseases like typhoid, diphtheria, and meningitis. Men and women who are likely to be in places where they may be infected by these diseases are inoculated with vaccines which make their bodies strong against these diseases, and this treatment, which has been given the long name of anaphylaxis, has saved many thousands of lives. Doctor Smith found out that the cattle tick, of which we read on page 3364, caused Texas fever. This was a great discovery, for it enabled the men of whom we have read elsewhere, to learn that mosquitoes are responsible for yellow fever and malaria, and the tsetse fly for sleeping sickness. He also discovered that tuberculosis in man is not quite the same disease as tuberculosis in cattle. Doctor Koch agreed with him in this and for a time thought that the milk of a cow who was ill with tuberculosis could not give the disease to a person who drank the milk, but unfortunately Doctor Koch was probably wrong, and at least it is much wiser to run no risk in such a serious matter. Doctor Smith is now at the great Rockefeller Institute, an institution in New York where a band of students are constantly at work striving to find out all about the human frame, and the enemies that attack it. At the head of it stands Dr. Simon Flexner, also an American, whose work is of particular interest to young people. For years he bent all the powers of his mind toward finding out the cause of infantile paralysis, which has hurt many thousands of children for life, and he found out that it is caused by the tiniest germ that ever has been known.

DR. ALEXIS CARREL, THE GREATEST MEDICAL SCIENTIST OF OUR TIME

One of the best known scientists of our time is Dr. Alexis Carrel, a French-

SCIENTISTS WHO HAVE SAVED LIVES

man, who was born near the city of Lyons, in the south of France, where his father was a silk manufacturer. His school and college days were spent at home, and he graduated from the University of Lyons, where he took his degree in medicine in 1900. Five years later he became a member of the staff of the Rockefeller Institute, and much of his work has been done at that great institution.

It is difficult to tell of the work of this

bones from one part of the body to the other, and to perform many other wonders in surgery that have been done on men wounded in the Great War.

*Now Dr. Henry Brysdale Dakin, who is not a doctor of medicine, but a doctor in chemistry and biology, had discovered that a solution of hypochlorites of soda will kill the microbes, or bacilli, as they are more often called, no matter how many there are in a wound. Doctor



Doctor Koch, the Discoverer of the Tuberculosis Germ, at Work in his Laboratory.

one man, it is so amazingly wonderful. Before his time, the flow of blood from an artery that had been cut could be stopped, but ever afterward the artery would be useless. Doctor Carrel found out a way in which the artery could be joined so that it would be able to carry on its functions as before. He discovered that as long as it can be kept alive, the stuff of which our bodies are built can be made to grow, just as microbes can be made to grow, and this makes it possible to take a vein from a part of the body where it has not much work to do and put it in the place of an important vein that has been destroyed, to transplant

Carrel learned of this treatment from Doctor Dakin, who was working with him among the wounded, and at once began to apply it. To make it successful, however, it is necessary to keep the wound always moist with the solution, and to keep the solution away from the healthy skin, which it would injure. So Doctor Carrel made a clever arrangement of tubes which run down from the jar of solution above the patient's head, and every two hours a nurse goes round the ward and lets the solution run down these tubes into the wound. When all the bacilli have been killed the wound heals up, and the patient quickly recovers.

HOW A NEW POWER DAWNED UPON THE WORLD



This is a picture of Professor William Röntgen at the moment when he discovered that the action of the mysterious X-Rays, produced by electricity in the Crookes tube at the left of the picture, had actually photographed a key through a solid substance. He had laid a book, with the key closed in it as a bookmark, on top of a photographic plate. In the course of an experiment the X-Rays were produced, and the key photographed on the plate. This discovery has been of great service in surgery.



A hamster—a rat with cheek-pouches—enjoying its long sleep through the winter.

THE WINTER SLEEP OF ANIMALS

A BUTTERFLY was born one day, and saw a world beautiful with sunshine and flowers and fruit. The air was sweet with perfume, the flowers were heavy with nectar, the world was a paradise for butterflies. And our butterfly danced and floated in the sunlight, and retired in the evening to the shelter of a splendid tree. The butterfly laid its eggs, and died. Its whole life lasted but a few days. To such a butterfly our world is always sunny and warm; always full of flowers and fruit. Now, how many of us realise that there are animals which live far longer than man lives—animals which know nothing but summer?

In a famous zoological garden an animal was shown, a few years ago, which had slept about two hundred years in all. The animal in question was an elephant tortoise, the age of which at the time of his death, was over 350 years. Now, he would sleep at least twelve hours out of each twenty-four during the summer. But that did not satisfy him. As soon as the dull days of autumn came, the tortoise puts himself to sleep, not for the night, but for the whole winter. And during all his long life—a life as long as the

CONTINUED FROM 6327



lives of six men—he never saw a winter. This tortoise was not different from the rest of his family. Every year he hibernates—that is to say, he passes the winter hidden away, and in sleep.

The long sleep of animals in the winter is one of the wonderful precautions which Nature provides for her children of the wilds. We might say that it is natural for a cold-blooded animal like the tortoise to go to sleep for the winter; that it is so sluggish an animal at the best that to change to a state of complete torpor or sleep is but a little step. But animals much more active than the tortoise go to sleep for the whole of the winter months.

When we read of travelers in the Arctic regions, we know that in the depth of winter they may come across the great Polar bear. Naturally, then, we say to ourselves that Polar bears do not hibernate. We are both right and wrong. Male Polar bears probably do not hibernate. They take their nightly sleep as we take ours, but they are always active in pursuit of food during the day. The mother Polar bear, however, goes to sleep for the winter. She lies down in the snow, and lets the soft, feathery mantle cover her.

Her warm breath keeps open a sort of funnel for her through which she can breathe. Far down in the snow as she may lie, there is always open a way to the upper air from which she can draw supplies of oxygen to keep her blood pure. And there, through all the winter days and nights, she lies. Winter comes and goes, and in due course the spring-time arrives. Then forth from her bed of snow comes the mother bear. And

trunk of a tree, or it may be some snug cave. All hibernating animals must, before settling down for the winter, find some suitable place. It would be of no use for them just to lie down the moment Nature told them that the hour was at hand for them to begin their winter sleep; they would die of cold, like ourselves, if they did not take precautions. They seek the right sort of shelter—some enclosed place, where the cold wind will not



A POLAR BEAR SLEEPING THROUGH THE WINTER

when she does come out, she does not come alone—she brings with her a baby bear, or, it may be, two baby bears, whiter and fatter and jollier than the finest Teddy bear that ever became lord of a nursery.

HOW BEARS PREPARE FOR THEIR WINTER SLEEP

But let us not forget that there are many other bears besides those of the Arctic regions, and many of these also hibernate. They do not bury themselves in the snow, but they find some other refuge. It may be the hollow

blow, and where the temperature will not vary. A mysterious knowledge which they have spurs them to do more than find out this shelter. As the autumn draws near, the bears eat and eat and eat, not because they are desperately hungry, nor because they are greedy. They eat that they may become fat. During the winter months, when they are lying asleep in their retreats, they require some sort of nourishment to retain life in their bodies. That nourishment they find in the masses of fat stored up in their bodies by the process

of heavy feeding which they have undergone in preparation for their long fast in the winter months.

The bear knows that he must be fat at the beginning of autumn when he tucks himself up in his cave or tree, or he will die, and so well does he understand this that, if times have been hard with him, and he has not put on a great mass of fat, he will not risk going off for his winter sleep. Woe to us if we come across him at such a time. We ourselves are bad tempered if we lose our sleep, but we are not as bad as the thin and angry bear which wants to sleep. That is the time when he is to be avoided. Another time is when he wakes up from his winter sleep. Then he is a bad-tempered fellow indeed. All the fat in his body has been absorbed during the winter; he is lean and hungry, and his fur is also matted and unlovely, and he is as much out of temper as any bear can be. But leave him alone, and he will come round. He will find roots, tender shoots of trees, honey, perhaps a few animals, and in a month's time his fur will have become sleek and fine.

THE RACCOON THAT SLEEPS IN A HOLLOW TREE

In the cold parts of the country the racoon goes to sleep quite early in the autumn. He sleeps all through the coldest of the winter months; but very early in the spring he wakes up and leaves his hollow tree, even though the snow may still be deep on the ground.

The badger belongs to a species which, in cold lands, passes a good deal of the winter in sleep. In this it is like the brown bear. Brown bears and badgers partly hibernate—that is to say, they have long spells of winter sleep, without passing all the winter in this way. These animals now and again bestir themselves to go out and get food. Forth they go, get a meal as best they can, then return to their lair and sleep for weeks. Even the common hare

hibernates to some extent. It can sleep and snooze for days, or even weeks together, in the snow in the fields, and feel none the worse for the adventure. The scientist would not call this true hibernation, for the hare, like the Polar bear, keeps open a funnel in the snow by means of its warm breath. The scientist insists that an animal, to hibernate, shall be in a state of complete torpor; that it shall be to all appearance dead.

An animal in this state is one of the greatest mysteries in the world. The breathing practically ceases, the heart beats faintly; the temperature, or bodily heat, of the animal sinks to the temperature of the place in which it

lies. Great cold numbs us, and makes us fall asleep—to die. But great cold awakens the hibernating animal. The sleeper is recalled to life, as it were, by a sudden fall in temperature, and if it is not able to move about and get food, or in other ways increase the heat of its body, it will die, frozen to death, like the weakest of us. A rise in temperature will

also recall the unconscious animal from its deep slumbers.

THE DEEP WINTER SLEEP OF THE BAT

The bats hibernate in the truest sense. If we were to take a bat when it is awake in the middle of summer and plunge it into water, we could soon drown it. But when a bat has fallen into its winter sleep we can place it in a bucket of water and keep it there for nearly half an hour, and it will know nothing about it, and be none the worse for the drenching. If the European hedgehog is disturbed while it is asleep in summer it will give a little snort or two, wriggle, then coil itself up tighter than ever, being quite awake.

When its winter sleep has started, however, we can do as we like to it without awakening it. It seems scarcely to breathe. When we try to rouse it, it will give one or two snores, then breathe



A BADGER IN ITS WINTER SLEEP

feebly a few times, and become as quiet as if dead.

It is said that in winter we might handle some deadly snakes without the least risk of danger to ourselves, but others, awakened from their torpor, would be as deadly as in the summer-time. There is plenty of opportunity for studying hibernation if we keep reptiles, for in cold climates they all go to sleep for the whole winter, provided that the conditions in which we keep them resemble the conditions under which these animals live when at large.

Numbers of rattlesnakes are often found in the winter closely coiled together as we see them in the picture in the story of the Great Snake Family. It is believed that they sometimes travel long distances to find a suitable cave in which to sleep. But who would care to handle rattlesnakes, even though they were asleep? Some of the deadliest vipers when aroused in the winter are said to be quite harmless; their "venom" is not poison at this time; but as other poisonous snakes are poisonous winter and summer, we should not care to experiment with the rattlesnake when he is waking up in a bad temper.

WHERE THE FROGS SPEND THE WINTER

We can get ample evidence as to the ways of hibernating animals from our common neighbors, the frogs. These sleep soundly through the most severe winter, but they are too wise in the

choice of their hiding-places for us to find them easily. When chill autumn comes the frogs betake themselves to their ponds, dive down to the bottom, and bury themselves in the mud. Should we by any chance come upon a hibernating

frog, he will swim lazily away, but will soon settle down again to resume the nap which we have disturbed. The freshwater tortoise buries itself in the mud of its pond. It is easy for any cold-blooded animal thus to pass the time in sleep. A reptile does not have to undergo so violent a change of tempera-

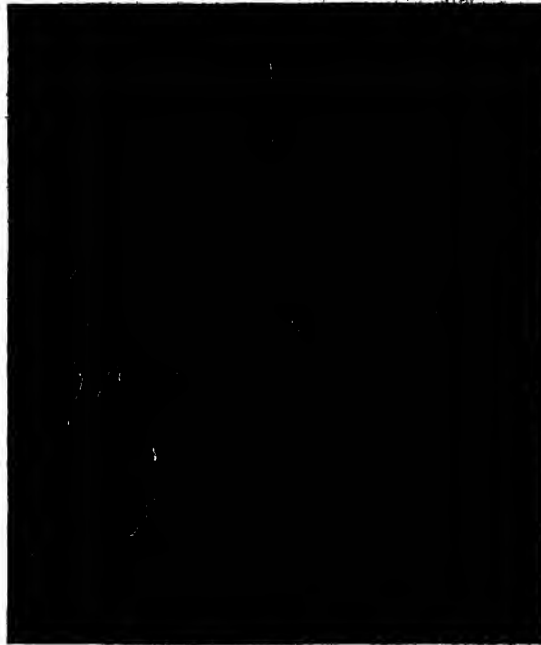
ture as a warm-blooded animal. A lizard makes itself at home for the winter in various places—under stones, among dead leaves, in holes and trees, and so forth. Land tortoises bury themselves for their winter sleep, and so do the common toad and the wood frog.

Lower in the scale of life we find the same habit practised. Slugs go to sleep in holes in the ground, and worms make their winter beds deep enough in the ground to escape the effect of frost, but in some places their sleep is not very profound. Snails, however, go into a very deep sleep, and they take a double precaution to protect them-

selves. They have their holes in the ground, but they are skilful enough to make a special protection for themselves. They close up the hole in their shell, but, as they must still have air, they leave open a tiny hole in this covering. It is hard to say how long



A young bat, life-size, picked up in the Surrey lanes at Ewell, near Epsom.



BATS DURING THEIR WINTER SLEEP

THE WINTER SLEEP OF ANIMALS

they can support life in these conditions. A snail from Egypt, called *Helix desertorum*, lived, gummed to a board, for four years. It then revived, and lived in a museum for two years after awakening. Hence we need not be surprised to learn that fresh-water snails have the power of hiding away and remaining without food all the winter months. Some fishes hide themselves in deep holes or in the mud, and remain in a torpor while winter lasts.

Many insects hibernate. But here we come to a parting of the ways, as it were. Are we to call the life of the chrysalis during the winter a hibernation? Some insects lay two or three lots of eggs in the course of the summer. The earlier lots will all be hatched during the same summer, but the later will remain either as eggs or as chrysalises during the time

at the end of July, when their food is still plentiful. That seems unaccountable to us, but that there is a good reason for it we may be sure from the fact that year after year the bats retire at about the same time. Probably the reason is that they have had all the food necessary to build up their bodily strength; to continue to feed might be useless, perhaps even harmful. Some bats migrate southward, and so escape the colder climate of the north.

WHY THE SQUIRREL MAKES A STORE OF FOOD

Let us glance at the methods of some animals that hibernate on less severe lines. Our pert and handsome friend, the squirrel, is one of them. We already know how he stores up food for the winter, then tucks himself up in bed and goes off to sleep. But warm days



A HEDGEHOG IN ITS WINTER SLEEP

of cold and absence of food. That is true of flies and many moths and butterflies. But we see butterflies on warm days in winter. True, there are some butterflies in temperate climates hardy enough to brave the cold days of winter. During frost and fogs and snow and rain they hide away in warm places, depending for life on the store of nourishment contained in their fragile bodies.

When the sun shines and the wind is warm, out they come, fluttering like winged sunshine in the wintry air. A very little suffices to feed them, and we are all glad, for the sight of a butterfly in winter is cheering.

It has taken the experience of thousands of generations to teach animals that it is necessary for them to go to sleep during the winter. Those animals which hibernate know their business better than we can teach it to them. Certain bats go off to bed for the winter



A DORMOUSE IN ITS WINTER SLEEP

of winter wake him up, or the action of his heart and muscles, which consume the fat stored in his body, does so. He wakes up, pops out to his store of nuts, and makes a good meal, then curls himself up for another long snooze in his delightfully warm little abode.

It is said that some of our marmots actually make hay and store it in summer, so that they may have abundant food during the winter. There are many species of marmots, and we can find something to admire in the wise ways of each. Those whose homes are in Europe and India make but little preparation, for they know that they will be able to leave their underground towns early in spring, and come out for food. Others lay up store for a long stay underground, so that as often as hunger awakens them they may have sufficient food in their little barns without having to go out and face the cruel weather. The woodchuck,

the best known of our marmots, makes no provision for the winter. He comes out of his burrow quite early in the spring time, and an old superstition says that if he sees his shadow, he goes back to sleep for six weeks more, knowing that the warmth will be slow in coming. Of course there is no truth in this old story.

The chipmunk or ground squirrel knows that winter is a hard time, during which he must shut himself up in his subterranean city. How well he provides against that time we may know from what was found in the winter home made by four chipmunks. There was a quarter of a pint of wheat, a quart of nuts, a peck of acorns, two quarts of buckwheat, a lot of corn, and a quantity of grass-seed. And this was to feed four fat chipmunks in the little intervals of wakefulness throughout the winter. Need we wonder at all that when they come out from their long winter sleep the chipmunks are as fat as butter?

WHY THE ANIMALS HIBERNATE

It is from necessity, then, not from choice, that the animals of which we have been talking take these long winter sleeps. Long as it has taken them to learn that they must accustom themselves to such a mode of life, they very soon shake off the attractions of a winter-long sleep if their conditions of life alter. We can keep a frog awake all the winter. We have only to keep him moist and warm and feed him, and he will not want to sleep night and day.

We know that men kept in a temperature equaling that of their own bodies, and doing nothing, can go without food for a long time. It is only at the beginning that hunger and thirst are felt; afterwards there is generally only a desire to sleep. Of course, if a man were moving about, or doing work, he would soon die; but keeping still in a warm place with pure air, a man can live many days without food or water. If a man can do this, we need not be surprised that cold-blooded animals like reptiles and amphibia and fishes can pass a winter without food.

THE BEAR THE ONLY FLESH-EATING ANIMAL THAT HIBERNATES

It is not so easy for an animal which needs occasional meals to hibernate. It is hardest, of course, for the flesh-eating animals. They have never yet learned

to store up food for the winter, except in the case of the Arctic fox, which does hide the bodies of captured animals, to be eaten when he wakes up now and again during the winter. It is wonderful that even a little animal like the Arctic fox should be able to make this provision. Of course, it would be impossible for a great bear to lay aside enough to keep himself fed during a long winter. He knows that, so he goes to sleep entirely, and eats nothing, making himself, by so doing, one of the greatest wonders of animal creation. Hibernation is a fascinating subject, and there is still a great deal to be learned about it.

ANIMALS THAT SLEEP THROUGH THE SUMMER MONTHS

The summer sleep of some animals is not such a simple matter for us to study. We have all noticed that on a hot summer day a heavy, drowsy feeling steals over us, and old people usually go to sleep during the afternoon. Sitting in front of a hot fire on a winter afternoon or evening will also have this effect. Well, the same sort of thing happens to animals, but with them it is a sleep for a season. Reptiles are most commonly affected in this way. The crocodile makes himself a bed deep down in the mud, and lets the sun bake the latter into a hard crust round him, and there he stays until rain comes to swell the river in which he makes his home. Then he breaks out of his muddy cradle, and is alert and hungry.

Snakes hide themselves in the same way, but let us beware of disturbing one. But the sleep during summer is not confined to the reptiles; the mud-fishes make a place for themselves in the mud. The water of the river dries up; the mud hardens until it is like stone, but the fish lies asleep inside, absolutely unharmed. And while it is in that state we can dig it up in its muddy case and bring it over the ocean, and wash it out of its earth into a tank in one of our conservatories, and it will live and flourish.

It is necessary that some animals should go to sleep to avoid the hardships of winter; it is just as necessary that others should sleep during the scorching heat of summer, for the blazing sun of tropical lands burns up the vegetation, and dries up the streams, so there would be nothing for them to eat if awake.

The Book of FAMILIAR THINGS



The Cullinan Diamond, and the Largest Stones Cut from It.

THE PRECIOUS STONES

WHAT is your birthstone?

If you were born in January, do you wear a garnet? Do you know the origin of birthstones, and the difference between the various stones? If not, then tuck yourself into a big chair by the fireplace, and read this story. Of course we shall have to start out saying, "Once upon a time," for that is the way stories begin.

Once upon a time, long ago in the first century, a writer, Josephus, told about the virtues of various stones, and described the breast-plate of the high-priest which is mentioned in the Book of Exodus (Exodus 28, 17-19). The stones in this breast-plate were set in four rows, with the names of the children of Israel engraved, one on each stone. The modern names of these stones are generally thought to be the following: carnelian, chrysolite, emerald, ruby, lapis lazuli, onyx, sapphire, agate, amethyst, topaz, beryl and jasper. The breast-plate had not only these twelve magical stones for the twelve tribes, but also the twelve signs of the Zodiac.

Perhaps the custom of wearing birthstones grew out of this, for some of these stones are still used in this way. It is only recently that people have thought about wearing birthstones, and the custom is supposed to have started in Poland among Hebrew gem-

CONTINUED FROM 6362

traders, though no one knows just who chose the gems for the different months. It is an attractive idea, for the stones are durable, and the sentiments attached to each have been handed down for many years, and by many races and peoples. The lists have differed from time to time and in different places, but the one given below is now generally accepted.

STONES FOR EVERY MONTH IN THE YEAR

There is at least one stone for each month, and each has a special meaning. For March, June, August, October and December, there are two stones. The garnet is for those born in January. Its meaning is constancy. The violet amethyst is for February, and is said to bring contentment to the wearer, and is the stone for sincerity. March is one of the five months which is favored with two stones. For this month we have the bloodstone, which means courage, and the aquamarine as second choice. Those born in April should wear a diamond, which typifies innocence. For May we have the emerald, and the wearers of this stone are supposed to be successful in love. June claims the pearl, which stands for virtue and health; and also the moonstone, which brings good luck.

Those born in July should wear the brilliant ruby as it brings nobility of

mind. August claims both the sardonyx, which prevents misfortune, and the peridot. To those born in September, the sapphire brings success and prevents evil. The opal, once called a bad luck stone, is now supposed to bring happiness and wealth to those whose birthday comes in October. The tourmaline is also a birthstone for this month. November has the yellow topaz, which stands for friendship and success. December is favored with two stones—the turquoise, which is said to prevent accidents, and the lapis lazuli.

HOW STONES ARE CUT INTO THE FORMS WE KNOW

Before going on to describe separately each stone in our list let us learn something of the way stones are prepared for us. Very few stones are set as they are found, because they need to be cut and polished to show their beauty. Otherwise they might seem dull, irregular and opaque. The practice of cutting stones is very old indeed. The Phoenicians may have learned the process from the Assyrians. Stones may be cut in many different forms, as the cabochon, table, step, rose or brilliant. They may be cut in curved surfaces like the star sapphires, or cut in facets (small faces), like the diamonds. Before the fourteenth century they were usually given curved surfaces; later the transparent gems, except the garnet, were cut with facets. When the garnet was cut with curved surface it was called a carbuncle. Many of the opaque and translucent stones are cut "en cabochon," that is, with smoothly rounded tops, as opals, moonstones, and turquoises.

Diamonds are sometimes cut in rose pattern, that is the facets are triangles of nearly the same size. When cut in this way the diamond is not so beautiful, and has little fire. Therefore, only the less valuable stones are cut after this fashion. The table or Indian pattern is used especially for emeralds, rubies and sapphires. The top and bottom of the stone are ground off, and its sides are so ground that the finished gem resembles two pyramids with the apexes flattened, placed base to base. The flat top is called the table and the bottom the culet. The widest part is called the girdle. Years ago, diamonds were cut in this way.

The cut which gives the greatest brilliancy, is called the brilliant. It has fifty-eight facets, thirty-three above including

the table, and twenty-five below the band or girdle around the stone at its widest point. The setting grasps this girdle and holds the stone in the ring, pin or pendant. The facets are of various forms and sizes, and have different names, as star, skew, and the like. It is said that the art of cutting diamonds into facets was discovered in 1456. If there is a flaw, that is a dull spot, in the rough stone, it may be possible to split or saw it off. The stone is then gradually rounded by rubbing against another diamond, and the fine powder and fragments that result are carefully saved for use in the final polishing.

The next process is that of cutting the facets. This work requires great care and skill. The stones are nearly buried in soft metal, and the parts left uncovered are rubbed against each other. The hands of the workers are protected by leather gloves. First the top or table facet is made, then the culet, or flat bottom facet, is formed. The long facets extending from the table to the edge are next fashioned, and at last the small facets.

Then comes the polishing against an iron wheel with diamond dust and oil. This operation is very slow, and a moment's carelessness may ruin a fine stone. When finished the stones are sometimes boiled in sulphuric acid to remove any bits of dust or oil. Only very skilled workmen can attempt the difficult task of cutting a valuable diamond.

WHAT IS MEANT BY THE WORD CARAT?

Do you think a carat is a vegetable? It is not even related to the carrot, though they sound very much alike. The carat, as a weight, is used for weighing precious stones. The word carat is said to come from the name of a bean, which was once used in the East as a weight. Nowadays jewelers do not use the beans, but the word carat is still kept. A little more than 151 diamond carats make an ounce. There is another kind of carat used in measuring the fineness of gold. It is a twenty-fourth of an ounce. If your ring is marked eighteen carat, it means that eighteen parts are pure gold and six parts are of some other metal.

IMITATION AND ARTIFICIAL STONES OF DIFFERENT KINDS

Perhaps you have seen in cheap shops rings or pins with glittering stones, which

are offered for a low price. Of course, you know that such stones are not real. They are generally made of various kinds of glass and soon grow dull. We know, however, what chemical elements are found in all the real stones, and men have tried to manufacture them. In some cases they have had success. They put the different things of which the stone is made into a furnace and melt them together. If done very carefully, in some cases they get a stone so nearly like that found in nature that only an expert can tell the difference. Excellent rubies can be made in this way. Men have also succeeded in making diamonds, but they are very small and cost more than the natural stones.

A doublet is an imitation stone made up of two parts—the top part consisting of a thin layer of a real stone of little value attached by cement to the base, which is made of nothing but colored glass. A doublet sapphire, for instance, would have the top a real stone, and for the base, a piece of blue glass. The upper part, as it is a real stone, will stand the test for hardness but the base shows its softness.

The triplet has a thin layer of a real stone on the top and on the bottom, too, but a piece of colored glass is inserted between at the girdle, where it is hidden by the setting. This imitation may be discovered by putting the unmounted stone in oil, or in boiling water or alcohol, when the stone will fall to pieces.

Imitation pearls can be made of small hollow glass beads formed by blowing. These blown pearls are coated on the inside with a preparation, called essence de Orient, made from the scales of a certain fish. Some imitation pearls are composed of a solid glass ball coated with a varnish, and they are very beautiful.

THE GARNET, THE STONE FOR THOSE BORN IN JANUARY

The garnet, which is the birthstone for January, is usually a dark-red stone, but it may be yellow, green, brown, or even black. It varies in hardness and in size as well as in color, for some stones are like a grain of sand, while some are much larger; some of them will scratch a piece of quartz; others may be scratched by quartz; some are opaque, and some are transparent. The name comes from the Latin, *granatus*, meaning seed-like, because the stone resembles the seed of the pomegranate.

If you find a stone which is roundish, and of the colored garnet, you may rightly think that it is a garnet. The little crystals which grow in the rock, but if you dig several perfect ones out of the rock you will notice that they have smooth faces. Sometimes they will have twenty-four faces. When rocks break, the garnets that are contained in them fall out and are washed into the stream. Garnets are as hard as quartz, and can stand being thrown about by the waves. The little red stones you may find are not the precious ones. The clear red garnets come from Bohemia, Ceylon, Peru, Greenland and the Cape of Good Hope. In America, some stones have been found in New Mexico and Arizona.

Garnets are something like the ruby, though cheaper, and were called by the ancients, carbuncles. When they are cut like the half of an egg, they are still called carbuncles. The stones are often so beautiful that they may be cut into gems of two or three carats each.

THE AMETHYST, WITH ITS VIOLET COLOR

The amethyst is a variety of quartz, and varies in color from a light bluish-violet to a clear dark purple, and sometimes is nearly black. The dark reddish-purple is the most highly prized. Amethysts have been found in many parts of the United States, but the best stones come from Brazil and Ceylon. Those found in Yellowstone National Park, in the Amethyst Mountains, Texas, in parts of North Carolina and Georgia are the best in this country. The value of an amethyst depends somewhat upon the fashion, for at times these stones have been considered very valuable.

THE BLOODSTONE, FOR THOSE BORN IN MARCH

If you see in a store window a ring with a queer-looking green stone with dashes of red, you may wonder what it is. Probably it is the bloodstone, a variety of jasper containing red streaks. This stone was used as a talisman by the ancient Egyptians and Babylonians. Now the stone is used especially for signet-rings. The Spaniards used to cut the bloodstone into a heart-shaped amulet, because they believed that it was a remedy for heart trouble.

The bloodstone, or hellotrope, as it is sometimes called, comes from Siberia and also from some parts of the United States.

especially Georgia, Oregon and California. In very ancient times, it was used for the engraving of sacred subjects. The figure was so placed that the red spots were made to represent drops of blood. It is sometimes called St. Stephen's stone.

THE AQUAMARINE, ALSO A STONE FOR THOSE BORN IN MARCH

If you should find a piece of a green glass on the beach, it might be merely a part of a broken green bottle, or it might be a real stone which is called aquamarine because it looks so much like the greenish-blue color of the sea-water. It is really a variety of beryl. Aquamarine is found in many different localities, but most of the best gems have come from India, Russia, South America, Siberia, and Ceylon. Aquamarines of various hues have been found in the United States, especially in California, North Carolina, Massachusetts, Maine and Connecticut. Possibly the largest and finest aquamarine ever seen was found in 1901 by a miner in Brazil. This stone although it shows shades of green and blue is so clear that one may look through it as though it were a piece of glass, and yet it is a big piece of crystal, nineteen inches long, weighing 243 pounds.

THE DIAMOND, THE KING OF PRECIOUS STONES

An uncut diamond is not beautiful; in fact it resembles a rough gray pebble. The diamond is composed of only one element, pure carbon, a very common substance. It is surprising to find that the coal in the grate, and graphite in the lead pencil, are exactly the same thing chemically as the diamond, but the crystals are arranged in a different way. The diamond, the emblem of fearlessness, has been called the "king gem;" the pearl, the emblem of modesty and purity, has been called the "queen gem." In the Sanskrit, the diamond is given names meaning thunderbolt, fire, and the sun. In the Greek, it was called "adamas," unconquerable, from which word comes our word adamant, meaning hard.

The three important sources of supply are India, Brazil and South Africa. Up to the sixteenth century, India was the exclusive home of the diamond. Recently it has been found in the United States, but most come from South Africa. Diamonds are grouped under different names according to their color. The most valuable ones are those said to be of "the

first water." The blue "Hope" diamond is probably the most celebrated colored diamond, but rose, black, green, mauve and salmon shades are also known.

A file cannot scratch a real diamond, though it will affect an imitation. A diamond will show up very clearly if placed in a glass of water, but an imitation will look dull. If you hold a diamond over a black dot on a piece of white paper, the speck will show clearly. If the dot is blurred or is multiplied, then the stone is not genuine. There are other tests, but the supreme test is its hardness, for the diamond is the hardest stone.

THE BEAUTIFUL GREEN EMERALD FOR MAY

The emerald is a grass-green variety of beryl found especially in Colombia, South America. It is also found in Egypt, Russia, Australia, and some have been mined in North Carolina. In Mexico, the emerald was given the name "quetzalitzli," meaning the stone of quetzal, because its beautiful green color resembled the golden-green of the Mexican bird, the quetzal, sometimes called the long-tailed paradise-trogon. The plumes of this bird were often worn by the rulers in Mexico and in Central America, and so the emerald came to be regarded as a royal gem. We are glad we have a name for this stone that is not so odd as the Mexican name.

Some people used to think that the emerald was a charm against illness if it was worn as an amulet around the neck. One of the most celebrated rings in history was a large emerald set in gold and worn by Alexander the Great, who had his portrait engraved on the stone. The very finest emerald in Europe now, belonged to the former Emperor of Russia. A perfect emerald is rare, and so is worth as much as a diamond of the same weight.

THE PEARL, THE QUEEN OF GEMS, FOR JUNE BIRTHDAYS

If you are eating oysters on the half shell and find some day a dainty little silvery pebble, you may have found a real pearl, though it is not likely to be worth much, as the best come from a kind of oyster which is not good for food. Something that does not belong there, perhaps a parasite or a tiny speck of sand, gets inside of the shell. The oyster tries to cover it over. This covering of nature or pearly substance is the same material

used in lining the shell. Most pearls are white or cream-colored, but some are found having a gray or even a pink shade, and others are rose-colored." You may read about pearl fishing in another volume of our book.

Although the pearl is not a stone, it is classed with the most valuable of precious stones. It is very delicate and loses its beauty if carelessly handled or exposed to great heat. When it is placed in cold storage for safekeeping, it should have a piece of damp sponge near it. If a pearl is cut across the middle and examined under a microscope, it will show a number of layers or rings, and so resembles an onion in structure. Pearls vary greatly in size and shape. Some are shaped like a button, others are pear-shaped, but the best are perfectly round like a ball. Pearls were known to the Greeks and Romans long before the diamond was known. A beautiful white pearl called the "Pelegrina," as large as a pigeon's egg, weighing 134 grains, is now in Moscow. The largest pearl known is in the South Kensington Museum in London and weighs three ounces. A very rich man in this country owns a string of thirty-seven pearls which cost over \$40,000.

The pearl oyster grows in warm waters in many parts of the world. The finest pearls come from the fisheries of Ceylon, but they are found around islands in the Pacific and Indian Oceans, in the Gulf of California and in the Caribbean Sea. Some of the mussels in the streams of the United States yield "fresh water pearls" which are beautiful but not so valuable as the real pearls from salt water.

THE MOONSTONE, THE SECOND STONE FOR JUNE

In India the moonstone is considered a sacred stone, and is supposed to bring good fortune. Whenever it is displayed for sale there, it is placed on a yellow cloth, as yellow is a sacred color. Nearly all the moonstones come from Ceylon. In Colombo, moonstones may be bought for a few pennies each, as they are very common there, but in this country they are valued much more highly.

The moonstone, which is a variety of feldspar, has a milky blue color, and a soft lustre, and is usually cut "en cabochon" with a rounded top, or cut in the shape of a ball. There is an old superstition that says that a moonstone held in

the mouth will help a person to remember things which he had forgotten.

THE RUBY, WHICH GLOWS FOR JULY

The ruby, the birthstone for July, when fine and large, is the most valued of all stones. The very name of the ruby, called in the Greek, "live coal," in the Latin, rubeus, or red, indicates its color, a vivid red, which sometimes has a tinge of purple or a pale rose-red.

Most of the real rubies have come from Upper Burma. A few have come from the gem sands of Ceylon; some are found in Siam; others come from Madras and Mysore, India; and a smaller number from Afghanistan and Australia. Those in the United States have been found in North Carolina and Montana. The oriental ruby is often mentioned in Eastern legends and old romances. Several stones which are not rubies at all have been called by the name. Though so much valued it is the stone which can be made artificially with the greatest success. Most of the artificial stones show tiny bubbles, if they are examined closely.

THE SARDONYX, WHICH BELONGS TO AUGUST

The sardonyx, as its name indicates, is composed of layers of sard and onyx. The layer of sard is of a deep brown or reddish color, while the onyx should have the delicate pink color of the finger-nail. These stones are often used for cameos. One of the most famous stones in the world is a sardonyx cameo upon which Queen Elizabeth had her portrait cut, and which she gave to the Earl of Essex as a pledge of her friendship. When sentenced to die, Essex sent this stone to his cousin to be delivered to Elizabeth. Through some mistake the stone reached the hands of the Countess of Nottingham, an enemy of the Earl, who refused to deliver the ring, and as a result the Earl was beheaded.

THE PERIDOT, THE ALTERNATE STONE FOR AUGUST

The beautiful olive-green peridot is sometimes called "chrysolite," meaning golden stone, or "Job's tears," from its shape, and sometimes it is called "evening emerald," because of its bright green color at night. The stone is usually cut "en cabochon," but a "table step-cut" form is considered more valuable. As the stone is rather soft and easily scratched, it is not so often worn in rings as in pins.

Most of the best stones come from a little island called St. John on the west coast of the Red Sea. A few very fine peridots were found not long ago in the ruins of an old house in Alexandria, where they had probably been buried with the idea that they would bring good fortune to the building. Some light-green stones come from Queensland, and some bits of peridot have been found in the United States.

THE SAPPHIRE, GENERALLY BLUE, BUT SOMETIMES YELLOW OR WHITE

The sapphire, the birthstone for September, is the symbol of truth and virtue. This royal stone, the "gem of gems," as it is called, has always been popular with lovers of precious stones, because of its beautiful blue color. Most sapphires are of a clear blue shade, varying from a pale blue to a deep indigo. We may, however, see some stones which are white, some which are yellow, and even some of a greenish-blue hue. Except in color, the sapphire is like a ruby. Both stones are composed chiefly of a substance called alumina. The stone does not show up very well at night.

Ceylon is famous for sapphires. In the United States they have been found in Montana and Idaho, but the largest number of these stones come from Siam, which supplies more than half of the world's sapphires. In Siam the stones are found in clay which contains gravel, and usually at a depth varying from two to twelve feet. The gravel and sand containing the gems is carried to a stream in large bamboo baskets, with a point at the bottom. The basket is then placed in a current of water, and its contents carefully washed, until the clay has been separated. As the gems are heavier than the common stones, they settle at the bottom of the basket, and are then picked out by hand. Garnets and zircons are often found near the sapphires.

THE OPAL, ONCE THOUGHT TO BRING ILL LUCK

The opal was the favorite stone of Queen Victoria, and she always loved this white fire-flashing stone, the symbol of hope. This gem shows many colors: the green of the emerald, the soft purple of the amethyst, the red of the ruby and the blue glints of the sapphire. The play of colors in this stone is caused by tiny fissures crossing in all directions, and is not due to any coloring matter, as in the

case of nearly all other colored precious gems.

Most of the opals come from Hungary, but some are also found in Australia, Ceylon, Iceland, the Hebrides, Ireland, Mexico and the United States. It is said that when the opal is first taken from the mine, it is colorless and transparent, but after it has been kept in the light for a time, the violet shade appears, followed by the other hues.

One very famous stone was called the "Burning of Troy," on account of the tiny tongues of red flame it showed as if it was on fire. There are some very fine opals from Hungary among the crown jewels of Austria, and the crown jewels of France. Recently some very beautiful black opals were found on Lightning Ridge in a desolate part of Australia, called the "Never-Never Land." No two of these stones are exactly alike. Some show flashes of blue glowing flame, others have intricate patterns of molten green and twinkling red. A stone which appears to have dancing flakes of sapphire blue, when turned to another position in the light will show flashing gleams of yellow and red. As they are rare, the black opals are very expensive.

THE TOURMALINE, WITH ITS MANY COLORS

If you saw a piece of tourmaline in the granite home where it lives, you might think that it was a stick of pink candy. But tourmaline is not always pink, for it sometimes has almost as many colors as the rainbow. Some varieties are brown, some are red, some are blue and some are even black. In the stones found in Brazil, the core is often red, surrounded by white, with a green shade on the outside. Specimens from the mountains of Southern California show a green core, surrounded by white, with red on the exterior, which is just the reverse of the Brazilian stones. Delicate shades of green, violet and brown are sometimes combined in specimens from Ceylon and Pegu. The island of Elba produces a variety of tourmaline whose crystals are black at one end, red at the other, with yellow in the middle.

The tourmaline is found in many parts of this country, especially in Connecticut, Vermont, and New Hampshire. It was first found in Maine by two boys who were interested in minerals. They were coming home from a walk when they

saw something green near the foot of a tree. They picked up a few pieces of this green stone, but as the snow was falling very fast, they returned home, and later came back to the spot, where they found a number of very beautiful crystals. This mine is like an Aladdin's cave, for over forty varieties of this stone have since been found there.

There are several varieties of the tourmaline: the rubellite, a pink or red shade; the indicolite, a blue color; and the achroite, which is colorless. When cut into settings for rings, the red tourmaline looks so much like a ruby that it is often mistaken for one. One of the Saxe Holm stories tells of finding a wonderful tourmaline.

THE TOPAZ, THE STONE FOR THOSE BORN IN NOVEMBER

Yellow is the usual color of the topaz, but not all are that color. In fact, you will have no difficulty in matching a topaz with your dress, for the topaz is found in an almost endless variety of colors. The finest stones are of a bright citron shade, at times showing a clear gold color. Most of the gems come from Brazil, but they are also found in many other parts of the world, as England, Russia, Saxony, Australia, and the United States. Sometimes a large white topaz is mistaken for a diamond, and the crimson topaz has been substituted for a ruby, while the green shade has been called an emerald and the blue shade has been mistaken for a sapphire.

The largest topaz on record was found in Brazil a few years ago, and weighed in the rough state eleven and one half pounds. It took several months to cut this huge stone. The Maxwell-Stuart Topaz is a stone which was first thought to be a piece of quartz, but later proved to be a topaz weighing 308 carats.

THE TURQUOISE, WHICH MEANS THE TURKISH STONE

The turquoise has been praised by many poets. We may remember, in Shakespeare's Merchant of Venice, when Jessica goes away with her father's jewels, old Shylock grieves greatly over the loss of his turquoise, which he would not have lost for "a wilderness of monkeys."

Centuries ago these stones were mined by the Egyptians in the desert of Sinai. They were found in Mexico before the discovery of America. A great many are now cut in America and shipped to

Europe. The best turquoises come from the northeastern part of Persia, where the mines have been worked for thousands of years. The name of the stone indicates that it came from Turkey, as the finest kinds came from Persia by way of Turkey. The beautiful blue turquoise is supposed in Tibet to bring good fortune and to guard against the "evil eye," and is thought to change its color and grow pale in sympathy with the health of the wearer.

The turquoise is similar to the opal. Like the opal, it is found filling up cavities in the interior of rocks. Some beautiful stones of robin's egg blue and some of green, as well as azure, have recently been found in New Mexico, Arizona, California, and Nevada. Now imitations of beautiful blue color have been made and they can hardly be detected without destroying the stone.

THE LAPIS LAZULI, THE SECOND STONE FOR DECEMBER

The lapis lazuli, or azure stone, is a rich blue stone which shows specks of iron-pyrites of golden hue, and is far more intense in color than any other opaque blue stone. For many centuries this stone was considered very valuable and was prized especially for its color, "blue with golden spots." By the Greeks and the Romans, this stone was known as the sapphire. Pliny called it the "blue sky flushed with stars." It is not always a deep blue shade, but varies from a pale blue or greenish to a pure green. The best come from Afghanistan, on the Oxus River in Asia; although some stones are found in Persia and China. To obtain the stone, the rock must be split by fire.

SOME FAMOUS STONES AND THEIR STORIES

In the Museum of Natural History, in New York City, there is a wonderful collection of over 4,000 specimens of gems, and every stone there has a special interest. In the display cases, one may see the most nearly perfect large sapphire known; the largest piece of gem beryl; the finest opal found in Mexico, which is a fire-opal of 17¾ carats; a garnet cameo, which was for centuries in the Vatican; a series of 166 sapphires in many colors, and many other large stones. There is a Persian turquoise engraved with a whole chapter of the Koran, containing over two thousand

words. In another case one may find specimens of the new stone, first found in California, in 1903, which has been called kunzite, for the gem expert, Dr. George F. Kunz.

The first native sapphire ever cut in the United States is also there. A large blue sapphire, weighing 163.93 carats, came all the way from Ceylon to find a place in the exhibit. The largest and most perfect star-sapphire known, showing the six-rayed refraction, may also be seen, and the famous "Star of India" sapphire, weighing 543 carats, has a prominent place. In the topaz section, there is a well cut gem of 615.90 carats from Ceylon. There are several specimens of amethysts from North Carolina and Maine, and a royal purple stone of 142.5-32 carats from the Ural Mountains. In the diamond series, there are several American crystals, one of 15.78 carats from Wisconsin.

In one room, one may see copies of the most famous diamonds of the world. One, the Cullinan, found in the Premier mine in the Transvaal, South Africa, in 1905, is the biggest stone known. The glass model of the Sancy shows the size of this stone, which is 53 carats. Other stones are the blue Hope diamond, which weighs 44½ carats, and the Regent of France, which weighs over 316 carats.

STORIES OF THE FAMOUS DIAMONDS— THE ORLOFF

Large diamonds are very rare. In fact there are only about a hundred stones weighing over thirty carats in the world. Some of these big stones have had strange histories of romance and intrigue. The stone which is known as the Orloff was once an eye in the statue of a god in a Brahman temple in Mysore, but a French soldier, who was stationed as a guardian of the temple, picked out this beautiful eye, and ran away with it. It was stolen from him by another thief, the captain of an English ship, who disposed of it to a Jewish dealer in London. It was finally sold to Prince Orloff, who presented it to Catherine II of Russia. It was in the royal sceptre, and was prized as one of the most beautiful of all the stones in the world. It is about the size of a pigeon's egg, of a yellowish shade, and weighed 194 carats, and was valued at \$1,649,000. Since the Russian Revolution it has been lost to sight, though strange rumors about it have come to us.

THE HOPE DIAMOND, A BEAUTIFUL BLUE DIAMOND

This diamond is interesting as it is the largest blue diamond known. It is called the Hope diamond because it belonged to a famous banker by that name. It was really one of the most valuable diamonds in Europe, though it weighed only about 44 carats. Little is known of its early history, though some people suppose that it was stolen with other stones from the French crown jewels at the time the Regent diamond was taken. It was found again, and later shown among the French jewels at the London Exposition in 1851.

THE EXCELSIOR AND THE REGENT DIAMONDS

Before the discovery of the Cullinan diamond, the Excelsior, weighing 971¾ carats, and measuring two and one-half inches in length, was the largest stone known. The man who picked it up while loading his truck at the mine, was rewarded with \$2,500 and a horse and saddle. From this stone were cut twenty-one brilliants.

A large, round stone weighing 410 carats was found in an Indian mine in 1701 by a negro slave, who concealed the discovery and fled with it to the coast, only to meet with a tragic end, for on board the ship he was robbed and then thrown overboard. The captain who committed this double crime sold the diamond, and spent the money recklessly. The stone had a varied history until it was bought from a Parsee merchant by Thomas Pitt, the English governor of Madras, grandfather of the famous William Pitt. He sold it to the Duke of Orleans, Regent of France, for whom the stone was called the Regent. It was stolen in September, 1792, during the French Revolution, and buried with other valuable jewels in a ditch to prevent any one from finding it. Twelve years later, one of the robbers told of its hiding-place near the Champs Elysees, because he was afraid to offer the stone for sale. All the thieves were sent to the scaffold, except the one who told where it was hidden. This treasure, you see, has been the cause of much unhappiness as well as joy. It has been recut so that it weighs only 136 carats, and is now among the French state jewels. Some of our readers may have seen it when they were in Paris.

The story of the Koh-i-nur begins as far back as the year 1302, when the Mogul emperor captured it, though some people say that the stone can be traced much further back. This stone, which has been called "The Mountain of Light," is the oldest diamond that is known, although it is not the most valuable. For many years the stone passed from one ruler to another, and was the source of endless misfortune to its possessors. It may have been one of the diamonds in the famous Peacock Throne of Shah Jehan, the great Mogul sovereign. This throne of solid gold, valued at \$30,000,000, was so called from the figures of two golden peacocks, whose feathers were set in rubies, emeralds and other gems.

The Koh-i-nur was finally presented to Queen Victoria in 1850. It was badly cut at first, and its weight has been much reduced by recutting. It now weighs 102¾ carats. It took many days to cut this big stone. Now the stone is kept in Windsor Castle, and a model is shown in the Tower of London.

THE SANCY, WHICH HAD AN EXCITING HISTORY

The history of the Sancy, also called the Sphinx, is bewildering, as several stones have been called by that name. The original Sancy was a beautiful almond-shaped Indian diamond, covered all over with tiny facets, and weighed 54 carats.

It is impossible to follow the journeyings of this stone, for it had a habit of hiding away for long periods. It was said to have belonged to Charles the Bold of Burgundy, but it was stolen from him by a soldier, who prized the golden box in which the famous stone was kept. Thinking that the bright box was more valuable than its contents, he tossed the white stone in the road. After a time he began to think that the contents of such a lovely box must be of value, too, so he returned to the place where he had thrown the stone and picked it up. Not wishing to keep it, he sold the stone to a priest for a florin, which is about fifty cents, and the priest later sold it for about seventy-five cents.

For a hundred years the stone was lost to sight. Then it appeared again, and in the possession of Nicolas de Sancy. Queen Elizabeth is said to have owned it,

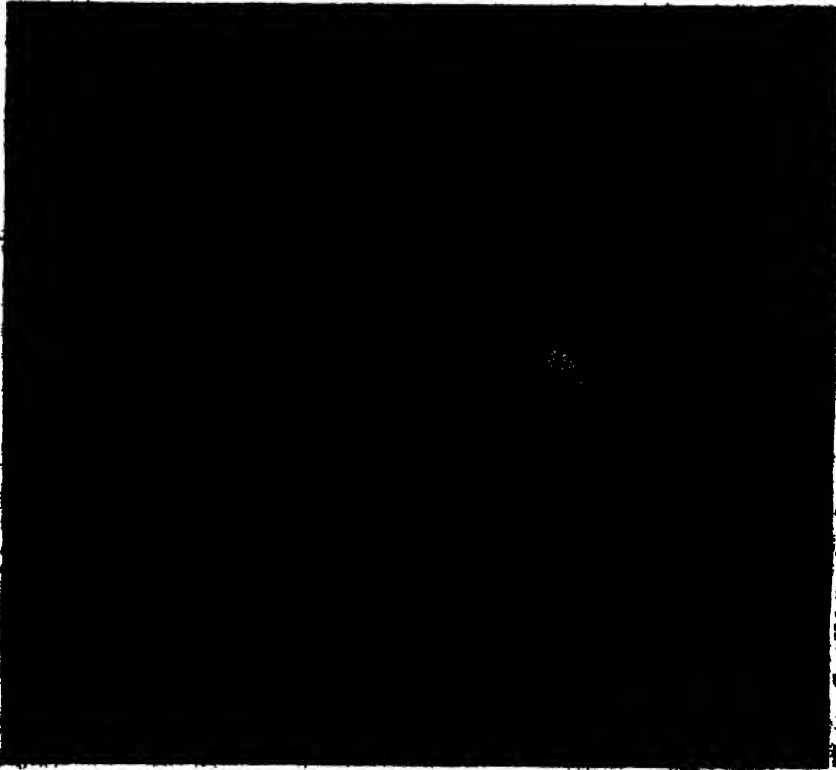
and later it was in the possession of Louis XIV. of France. It was the result of a long search. Spain owned it for a while, and then it disappeared. It is said that it is in India now. The story seems to be that the stone is the same whether the same stone is found in these stories. All of the stories seem to be true of one stone, and yet it seems possible that there could be several diamonds so large.

THE CULLINAN, THE LARGEST DIAMOND EVER FOUND

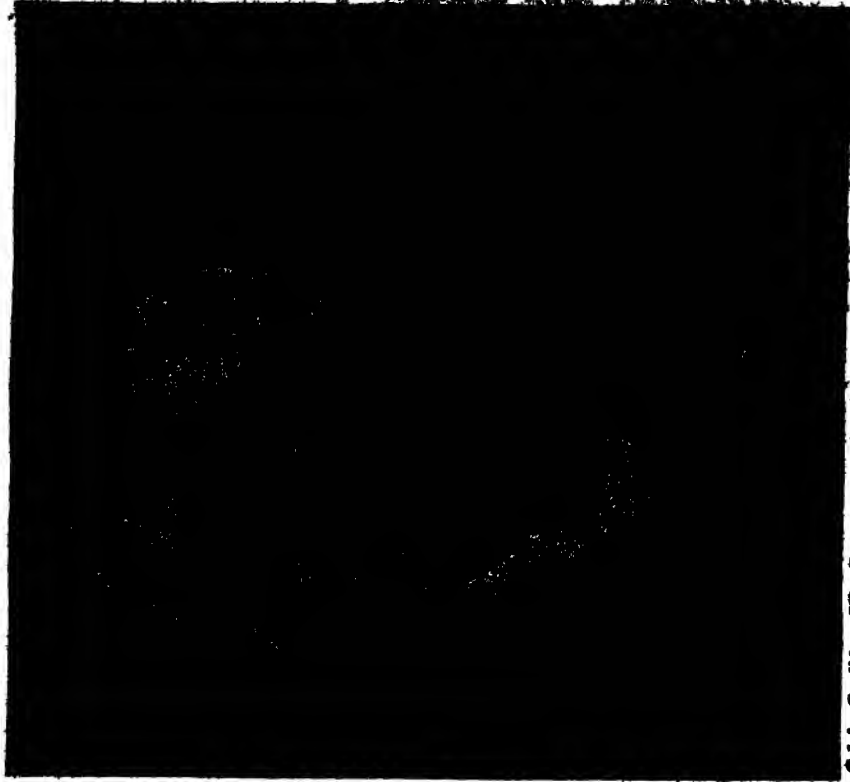
If you saw a stone the size of your fist, you would not call it a diamond, would you? On the contrary, you might think it was merely a piece of ice, or perhaps a lump of quartz. You will not see a stone that size every day, for there has been found only one diamond as large as your hand and as heavy as a pound and a third of sugar. This huge stone, called the Cullinan, was three times as large as any known diamond, and weighed before cutting, 3,025¾ carats, and measured four by two and one-half by two inches. It was purchased by the Transvaal government for the sum of one million dollars, in 1907, and was presented to King Edward VII, of England, on his birthday, November 9, 1907. Three years after it was found it was cut in Amsterdam and divided into nine large stones and a number of small brilliants. Two of the stones, by far the largest brilliants in existence, have been placed, the one in the sceptre, and the other in the crown of the British regalia. At the head of this story we show the original stone, and the largest stones cut from it. The larger, known as Cullinan I, weighs over 516 carats, and the smaller, called Cullinan II, weighs over 309 carats. Some people believe that the original Cullinan was only a part of a much larger stone, which may be found some day.

There are many other large diamonds in existence, such as the Star of South Africa, the Stewart, the Porter Rhodes, the Tiffany, and the Jubilee, but none of these has a particularly exciting story. They are simply beautiful stones. One sometimes wonders how much diamonds would be prized if they were as plentiful as quartz. They are beautiful, to be sure, but would men and women wear them so proudly, and struggle so hard for their possession, if any one could get them?

PRESIDENT HARDING AND VICE-PRESIDENT COOLIDGE



Warren-Gerrard Harding, President of the United States, was born at Corsica, Ohio, November 2, 1875, and died in Ohio General College, at Iberia, Ohio, became chief of the Harding Trust, was a member of the Ohio senate, and lieutenant-governor. He became United States Senator in 1915, and was elected President in 1920. He died at Art College.



Calvin Coolidge, Vice-President of the United States, was born at Plymouth, July 4, 1892, graduated from Amherst College, studied law and became a member of the Massachusetts legislature, he served three years as lieutenant-governor, and was Governor of Massachusetts, nominated and elected Vice-President.

The Book of THE UNITED STATES

WHAT THIS STORY TELLS US

CHILDREN usually do not think much about government. They know that they live in a republic but they seldom know much about it. Because they think so little about government, our schools are generally organized as absolute monarchies, where the teacher makes all the laws. Below we give you the story of a method which gives the pupils a great deal to say about the government of their school. It is called the School Republic, and tells you what has been done in many states of the Union, and in some foreign countries. The plan allows the pupils to make all the common rules and regulations which are necessary for the orderly conduct of a school. Schools, cities or states cannot exist without government of some sort, and the only question is as to who shall do the governing. This interesting story tells what students have done.

THE SCHOOL REPUBLIC

DID you ever hear of a School Republic? Probably not, for they are not very common, and you can hardly guess what the words mean, for your own school is probably not organized in that way. You are sure that republic has something to do with people governing themselves, and in few schools do the pupils have that privilege. You probably think that it is the business of the teacher to govern the school.

School republics are schools where the pupils make the rules of conduct, try any one of their number who has broken one of them, and perhaps punish him. Such school republics are organized in several countries of the world, and more and more people are growing interested in them. Let us see why this is true.

WHY ARE PEOPLE SO MUCH INTERESTED IN GOVERNMENT?

Since the Great War began everybody has been talking more about government than ever before. We have learned that the kind of government people have makes a great deal of difference in the way they behave. If they have a government in which they have no part, they cannot prevent their rulers from doing many evil things if they desire to do so, and the rulers can even compel the people themselves

CONTINUED FROM 6375

to take part in doing such things too.

Our soldiers and sailors are fighting in the war "to make the world safe for democracy."

This means, in part, that the people must have the right to govern themselves, and that no one must dare to harm them. Democracy comes from two Greek words which mean the "rule of the people."

Now the people may have a great deal of power, even though they have a king, and they may not have any at all. The people of Canada say that they are a part of the British Empire, over which King George V rules, but the people of Canada rule themselves. On the other hand, the people of some kingdoms do not have anything to say about how they shall be governed. So you see what you call the government of a country does not always tell how much the people have to say about that government. Republics generally allow the people more freedom than kingdoms, but this is not always true.

People often say that a country cannot have a republic, or that the people cannot have power because they do not know how to use it. That is what is the matter with Russia, they say. The people of Russia do not know enough to govern themselves, and that is the reason why there is so much confusion in that unhappy country. Peo-

ple sometimes point out the republics of San Domingo and Haiti, and say the same things about them.

HOW CAN SELF-GOVERNMENT BE LEARNED?

Perhaps they are right, but we can ask, how are the people of these countries ever going to learn to govern themselves if they have no practice? One cannot learn to play the piano, or to spin a top, even, without practice. We see grown men taking a great deal of time, and making many bad shots, learning to play golf. One might tell you how to play baseball for years, but if you never had a ball in your hands during that time, you would not learn to play the game. You might know a great deal about it, but that is not the same thing, as you would soon find out on the field.

We do not have good government in all our states and cities, even though the people here have the right to govern themselves. One reason is that many of our grown people either do not know much about their government, or else they do not take the trouble to see that good men are elected to office. We cannot have good government unless the citizens take interest in it, and see that the laws are obeyed.

WHAT GROWN PEOPLE SAY ABOUT CHILDREN

Now grown people often complain of children and say that they do not control themselves. Unfortunately what they say is sometimes true, and children often annoy their elders and do themselves much harm, because they do what they think they would like for the minute, without thinking whether it is the thing which will give them, and those around them, the most happiness in the end. But are the children always to blame?

For one, I am quite sure they are not. Children have very little practice in learning how to govern themselves. They are told to do this, or to do that; they are told not to do this, or not to do that. Sometimes they are told one thing one day and the opposite the next day. They cannot understand the reason, and they sometimes come to think that there is no reason in it. When they disobey or forget, sometimes they are punished, sometimes not. Some parents are foolish enough to punish too little, as well as to punish too much. There is no doubt that wrong-doing should be punished.

THE FORM OF GOVERNMENT IN THE SCHOOL-ROOM

The same thing is true with teachers, for the school-room is generally an absolute monarchy. An absolute monarchy is, you know, a form of government where the ruler has all the power, and the subjects have nothing to say about the government. If the monarch is very strong there is good order, while if he is weak there is a great deal of trouble. The subjects break the laws, and no one is happy.

Now some wise men thought over the fact that we have a republic here in the United States, and that the boys and girls in the school-rooms will help to rule this country in a few years. They have been getting no training for this responsible work. Is it not just as important that they should learn how to be citizens as it is that they should learn how to spell, or to calculate percentages? A citizen must be a citizen all the time, and he is not always spelling or calculating percentages.

AN IDEA WHICH CAME TO A MAN

Then an idea came to one of these men while he was thinking over the question. Why not organize the school-rooms as school cities, or school states, or school republics, and allow the pupils to learn how to govern themselves? Many people thought the man who first suggested the idea had lost his wits. They said that there would be so much disorder that the school could not go on, and that no child would learn anything at all. Some people simply laughed at him. They had the idea that children are naturally bad, and like to do wrong.

The man did not mind their laughter, and would not stop talking about his idea. At last he got the managers of some schools to agree to try the plan. They allowed him to tell the children what he had in his mind, and the pupils were eager to join with him when they heard the explanation. A sort of constitution was drawn up, elections were held, the school cities were organized, and set to work. None of the dreadful things that people had feared came to pass. The children took more interest in their schools than ever before, had better lessons, and behaved much better. The teachers had an easier time, and the children were happier in school than they had been under the old plan.

THE OFFICERS ELECTED IN A SCHOOL CITY

One of these school cities elected only a mayor, a chief of police, a judge, and a health officer. As the school was small, all sat together to make the laws, which are only rules. They talked over the things which ought, or ought not to be done, and voted on them. If a majority voted for them they were written down, and all understood that they were to obey them. In a republic the majority must rule. If any one disobeyed, the chief of police arrested him and brought him before the judge. Witnesses were called and the judge listened to them. Then he decided upon the punishment.

The laws were the simple laws of good conduct which all the children knew, even if they had broken some of them sometimes. They had laws about order in the halls, about marking on the walls, about behavior on the playground. They made laws about neatness of desks, and about neatness of person, and appointed inspectors to see that they were obeyed. Some school cities make laws about cheating, about lateness, and about telling lies. Some cities have made more rules than the teacher had made, and have obeyed them better too.

If a policeman saw a boy about to break any of the laws, it was his duty to go up to the offender and warn him to stop. Usually this was enough, but sometimes the boy or girl would keep on in spite of the warning. The policeman would then order him to appear before the judge at a certain time and would tell the witnesses to be present. The judge would then ask the policeman what he had seen, and would ask the offender what he had to say for himself. After hearing what the policeman, the witnesses and the offender said, the judge would decide whether or not he was guilty.

HOW THE JUDGE PUNISHED THOSE WHO HAD DONE WRONG

Punishments in a school city are of various kinds. Sometimes the judge reprimands the offender before the whole school. No citizen likes that, of course, and often it is enough to make him do better in the future. Sometimes he is shut out of all the games for a certain time. Sometimes he is ordered to apologize in public for his rudeness. If he has destroyed property, he must make good the loss before anything else can be done.

If a boy or girl has done anything very bad, he or she may be deprived of a citizen's rights in the republic. This is one of the most serious punishments. It means, of course, that he no longer has a vote in the affairs of the republic, and can hold no office.

Many school republics were founded after the first ones, and some judges have ordered all the citizens not to speak to some one who had been guilty of a very serious offence and did not seem to be sorry for it. It has been found that this is the most severe punishment that can be inflicted. It is said that no boy has been able to endure being cut off from his fellows for more than one week.

The most interesting thing about the whole matter of punishments is that little punishment has been found to be necessary. When boys and girls feel that they have had a part in making the laws, they also feel that they ought not to break them. Many boys, who had been troublesome to their teachers in many ways, became model citizens after the organization of the school republic. Public sentiment looked upon a law-breaker with disfavor. The citizens felt that one who did not obey was really harming every one of them. This is what every good citizen should feel about breaking the law.

DIFFERENT FORMS OF GOVERNMENT IN SCHOOL REPUBLICS

Such a form of government as this, where every one has a direct voice in making the laws, is called a pure democracy. It works very well while the number of citizens is small, but does not work so well where it is very large. In a very large school it is necessary to organize each room as a ward in the city, and to elect one, two, or three aldermen from each. These aldermen meet together to make the laws for the school city. They represent the pupils, and so we call this a representative democracy. There would be one mayor, and one chief of police for the whole school.

Of course, in a large school city there would be need for more than one judge, and for several policemen, health officers, inspectors and the like. They are sometimes appointed, by the mayor, and sometimes elected by the citizens. Their duties would be the same in either case. In large school cities a district attorney might be necessary. This officer always represents the people in court. It is his

business to state the case for the people when any one is accused of doing wrong.

WHAT POSITION HAS THE TEACHER IN A SCHOOL REPUBLIC?

Some one may inquire if the teacher has anything to do with the government of a school republic. Can he or she have nothing to do with the government of the school? It is always understood that the rights of the teacher are still there. He simply delegates some of them to the pupils. First, he must approve the charter or the constitution under which the school republic works, and sometimes the charter provides that he may veto, that is, forbid, any law, or that a law may not go into effect until he signs it.

Some one made this comparison. The position of the teacher and the school board, or the school trustees, is like that of a state government, while the school republic is like that of a city in the state. A city has a charter giving it some rights of government and the power to do certain things. So long as the city does not abuse these powers, the state government does not interfere. If it does misuse its powers, the state steps in to stop it, and can take the powers away, or change them as it sees fit.

THE DIFFERENCE BETWEEN A SCHOOL CITY AND A SCHOOL STATE

In a very large school, or in a small city where there are several schools, a school state is often organized. Here each school keeps the officers it has and makes some laws for itself, but elects representatives to the school legislature to talk over the matters of all the schools, and to make laws which apply to all of them. All the schools have some of the same laws, and the conduct in all the schools may be more nearly the same. A school state must have a governor, of course. In a real state he is chosen by all the citizens. If a school state should be organized we could say that the position of the teacher and school board was similar to that of the president and Congress.

Of course girls as well as boys must be citizens of the school city or the school state. They are quite as important in school as the boys are, and should have equal rights. Women are voters in many states now, and before very long they will be voters in all the states, and it is quite as necessary for girls to learn to rule themselves as it is for the boys. In some

school states girls have been elected mayors or judges and have made good officers.

WHAT BOYS AND GIRLS LEARN FROM THE SCHOOL REPUBLIC

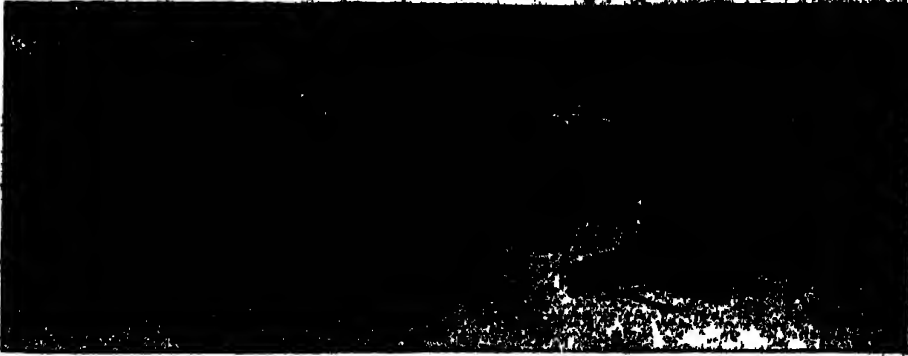
What is the use of all this? In the first place it makes the children happier, and more contented, and that is something. They behave better, they learn how government is carried on, they learn a very important lesson, which is that in a republic the majority must rule; they learn the duties of the different officers in a city or state, and they soon discover whether or not an officer is doing his duty. They learn why laws are made. All of these things are good training for them.

The idea of the school republic has spread to other lands. When General Leonard Wood was governor of Cuba, he appointed Mr. Wilson L. Gill, the author of the school republic idea, to supervise the training for citizenship in the schools of that island. School republics were organized in each of the three thousand, six hundred schools, with excellent results. Though the Republic of Cuba, when it took over its own affairs, did not feel that it could appoint an officer to continue the work, many of the schools in Cuba yet use the plan.

SOME PLACES WHERE THE PLAN HAS BEEN TRIED

In the United States it is in use in some of the Indian schools with excellent results. The Indian boy or girl has not had even as good an opportunity as the white child to learn the duties of citizenship. Indians have not been allowed to become citizens until recently, and so their parents could teach them little on the question. In far-away Alaska there are school republics both in the white schools, and in those where the little Indians and Eskimos are taught. The idea has found favor in Japan. There are school republics in several countries of South America, in Hawaii, in South Africa, and in some of the European states. In fact it is difficult to find a country where there are not a few. Unfortunately many parents and teachers are afraid to introduce the idea. Parents were brought up under the old system, and many have forgotten that they were ever children; and the teachers fear that the plan will not work, because it is so different from the methods they know.

THE END OF THE BOOK OF KNOWLEDGE.



The Invalid is Interested and Amused.

THE WONDER OF RADIO

WE live in an age of marvels. One wonderful invention follows another, and no one can even guess the limits of the inventive power of man. We take all these inventions as a matter of course and seldom stop to think how different is the world in which we live from the world in which our grandfathers or our great-grandfathers grew up.

We have told you of many of these wonderful inventions. The changes and improvements in methods of communication have been among the greatest of all. We have told you of the locomotive, the steamboat, and the airplane; of the phonograph, the telegraph, and the telephone. Now we come to radio, the latest of the wonders. If you will read the stories of the telegraph and the telephone first you will understand radio better.

To make slender wires carry signals or speech seemed a miracle. When it was found that these same signals could be carried without wires, as told in Volume XI, the whole world gasped. Scientists were sure that some day speech and other sounds would also be carried, but the spark-gap, about which you will read in the story of the telegraph, did not carry speech very well. Much study and many experiments were necessary before delicate

instruments were constructed which would carry clearly and surely the sounds uttered many miles away, and give them back without change. Great progress was made during the World

War, but it was not until about 1920 that the radio-telephone became a popular success.

Now its use is almost world-wide. One of our readers may be in a lonely farmhouse among the hills, another in a city apartment, and a third, perhaps, in a lighthouse on an island. The only sounds they hear are the wind in the tree-tops, the dull roar of traffic, or the beat of the waves. With the turn of a knob each may hear the same things. Perhaps the voice of a famous singer is being heard by thousands instead of hundreds; perhaps a great orchestra is playing some masterpiece; perhaps a teller of stories is amusing the little folks; perhaps the scores of baseball games are being given inning by inning, sometimes play by play; perhaps the weather man is telling of an approaching storm, or market reports are being sent out to the farmers. In fact these broadcasting stations have something for every member of the family. We shall tell you more of them in a moment.

RADIO WAVES AND SOUND WAVES IN THE ATMOSPHERE

Now let us see how it is done. What

does radio mean? You are told elsewhere in our book that sound waves travel through the air at the rate of a mile in about five seconds, though they travel faster through metal. It has been found that electro-magnetic waves can be set up in the atmosphere. They travel at the speed of light; that is, 186,000 miles a second, several hundred thousand times as rapidly as sound waves. The waves pass not only through the atmosphere but also through walls, forests and mountains. Some are absorbed, but enough get through to affect the sensitive receiver, but they cannot be felt by any of our five senses. That is, our unaided senses cannot tell whether the air is empty or full of these waves. The waves travel in all directions from the center from which they begin. Have you ever thrown a pebble into a pond and watched the circles of waves move out to the banks, growing weaker as the distance increases? Radio waves in the atmosphere move in a similar way, except that they move outward in every direction. Perhaps you can understand the way they spread better if you think of a soap-bubble growing larger and larger. Now think of a succession of smaller bubbles, each inside the next larger one and each growing larger and larger; or think of the way the rays of light from a candle spread in every direction. Remember these illustrations, for you will need them again.

WHAT DO WE MEAN BY WAVE LENGTH?

These radio waves are produced by the vibration or oscillation of electric current. There is more than one kind of electric current. A direct current flows steadily in one direction, but direct current does not produce radio waves. An alternating current flows in one direction until it reaches its height, flows back, rises again, flows back, and so on with marvelous rapidity. Each complete change is called a cycle. Ordinary lighting current in an electric lamp goes through about sixty cycles in a second. The rate of radio vibration is much higher—from 20,000 to as much as 6,000,000 cycles every second. This is called radio frequency.

You have been told that radio waves travel 186,000 miles in a second. Then it is plain that the length of a wave, by which we mean the distance from the top of one to the top of the next, will be the distance that the current travels in a

second divided by the number of vibrations in the same time. Now 186,000 miles is about 300,000,000 metres. This sum divided by 1,000,000, say, gives a wave length of 300 metres. By regulating the number of cycles, different wave lengths may be obtained. In order to hear clearly, the receiving end must be tuned to the same wave length sent out by the transmitter.

THE FOUR REQUIREMENTS OF RADIO

Now, how are these waves set in motion, and how are they received? These four things are required: (a) a transmitter which will change the sound waves produced by the voice or musical instrument into electro-magnetic or radio waves; (b) an antenna or aerial which will set them loose in the atmosphere; (c) a receiving antenna which will respond to the waves sent out by another antenna perhaps hundreds of miles away; (d) a receiver which will transform these radio waves back into sound waves.

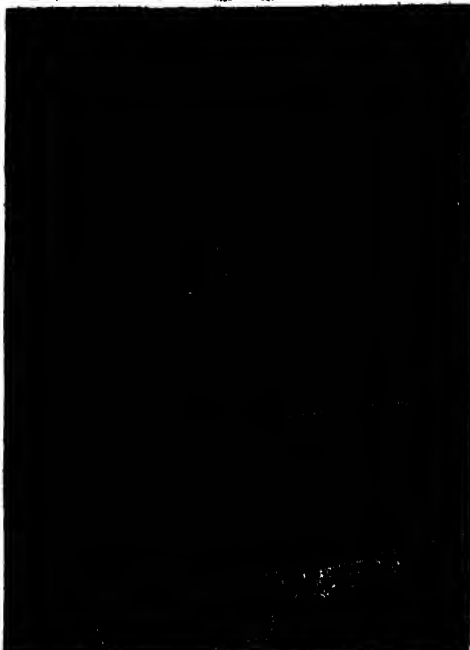
It would take a whole book to describe the different kinds of instruments which may be used for sending and receiving. In fact there are dozens of books which tell how to set up and use radio sets, and the boy or girl who wishes to set up a set, or even to make one, would do well to get one of these books. Our space will not allow us to go into all the details.

There are many kinds of transmitters, but the principle is the same in all. There must be a source of electric current. This current must be changed into a high or radio frequency current. A mouthpiece which responds to sound waves must be connected with the current, so that the sound waves may be transformed into radio waves. A wire must lead to the antenna which flings the waves into the atmosphere. This antenna is a wire or wires stretched between two points some distance above the ground. The more expensive sets can be adjusted to give radio waves of several lengths. The cheaper sets cannot.

WHAT THE SIMPLEST RECEIVING SET REQUIRES

Most of our readers are more interested in receiving than in sending, and the difference between receiving sets is greater than in the sending sets. The very simplest receiving set has an antenna with a wire leading down to the receiving room, another wire to the ground, a detector

SPEECH AND MUSIC ARE SEEN AND HEARD



Dean Fay of Tufts College is here shown reading the first of a series of lectures into a sensitive microphone. This lecture was heard by thousands, some of them many miles away.



Miss Jean Wood of Toronto, Canada, is playing a piano selection. Though the audience is not visible, it is much larger than could be packed into any hall, however large.



Mario Chamlee, Orville Harrold, tenors, and Madame Lucresia Bori, soprano, all of the Metropolitan Opera Company, are having tea in Madame Bori's apartment, in New York City. Incidentally they are listening to a concert given, perhaps, by some of their colleagues, which is coming through the air from the broadcasting station at Newark, N. J., miles away. Pictures from Underwood & Underwood, N. Y., 2nd and 3d copyright.

which transforms the high frequency radio waves into currents which travel in one direction only, and a telephone receiver which makes waves audible. The simplest detector is a mineral crystal, which, by allowing the waves to pass through in one direction much better than in another, changes (rectifies) the alternating current into a direct current. The most popular crystal is galena (lead sulphide).

Such a set requires no battery and costs very little, but it is not very satisfactory. Generally it will catch messages from stations near by, but it cannot be tuned to receive only waves of a given length. Therefore, if two or more stations are transmitting, there is likely to be confusion, just as there is when you try to listen to two people talking at the same time. A tuning coil or a variometer may be added, and then one can select the length of wave one wishes to hear.

It is possible to make these sets very small. One man has made a set which is fastened to a ring which he wears on his finger. There are pocket sets in which the tiny detector is fastened on the back of a small telephone receiver. Two tiny spools of wire are attached. One wire can be attached to a large umbrella or to a fire escape, or even to an iron bed, which is made to serve as a receiving antenna, and the wire from the other spool is attached to a water pipe or an iron fence which serves as a ground. With such a set one can pick up waves sent by a powerful station near by.

In fact in a receiving set an antenna set high in the air is not absolutely necessary. Since the radio waves pass through walls and fill the atmosphere everywhere, a loop antenna set up inside the house is sometimes used. This loop is a wooden frame around which is wound a number of turns of wire, spaced about an inch apart. One man, whose landlord would not allow him to set up an antenna on the roof, dropped a wire down the chimney. The radio waves passed through the bricks, and he was able to hear sending stations near by. Another man ran a wire around the room behind the picture molding. There are receiving sets no longer than a policeman's club which can be carried anywhere. Of course none of these sets is so sensitive as one with a high antenna. In cities, however, the loop antenna is being used very frequently.

THE LITTLE INVENTION WHICH MAKES THE WIRELESS TELEPHONE POSSIBLE

The better sets use a vacuum tube instead of a crystal detector. In fact this little vacuum tube is what makes radio, as we have it to-day, possible. The vacuum tube is a glass tube, much like an electric lamp. Within is a tungsten filament (around which is a coil of wire called a grid), and a plate. The vacuum tube has three important uses. In the transmitter it will convert direct current from a storage battery into the high frequency alternating current which will produce the radio waves and does away with the spark-gap; in the receiver it will take the place of a crystal detector and change radio waves into direct currents, and it can also be used to make the sounds stronger. By using enough vacuum tubes one can increase or amplify the sound of a voice so that it can be heard for miles. With vacuum tube sets electric batteries are necessary.

THE MEN WHO INVENTED RADIO

No one man can be said to be the inventor of the radio-telephone. The principles are the same as those of the radio-telegraph, though of course it is harder to transmit speech or music than signals. Only a few of the experimenters can be mentioned. Professor R. A. Fessenden made an experimental radio-telephone as early as 1900. Improvements were made by E. W. F. Alexanderson, and again by Valdemar Poulsen. Dr. Lee de Forest, who had already done much for radio-telegraphy, discovered some of the properties of the vacuum tube. The work of Dr. Irving Langmuir and Major E. H. Armstrong is important. There are dozens of others, perhaps equally important.

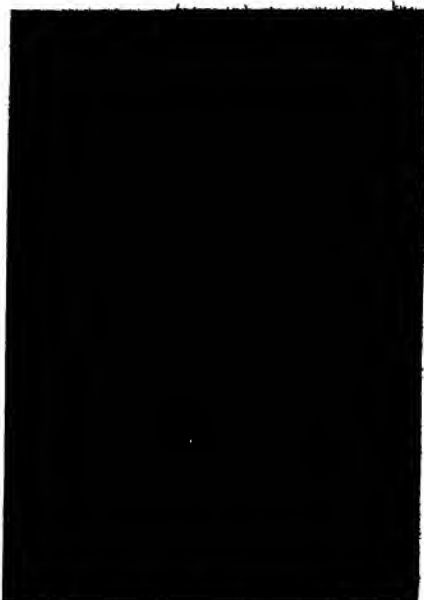
WHAT ARE BROADCASTING STATIONS?

The great companies which make electrical apparatus worked long and hard to improve and simplify the instruments for radio-telephony. When they succeeded they set up great stations with powerful transmitters in different parts of the country. Each station always uses the same wave length, which is different from that used by other stations, and flings the waves into the air in every direction. Daily programmes are made up and advertised. At every hour of the day there is something of interest for some member of the family; or, if one has a good re-

SOME INTERESTING USES OF RADIO



General Pershing is here shown listening to a message out of the air and is making a memorandum. The use of radio in any future military and naval operations will be exceedingly important and helpful.



Here is a portable field set which can be carried anywhere. Notice the antenna fastened to the tree, and the wires coming down to the instruments on the ground. Picture from Brown Bros.



These two sets are in the naval radio station at Arlington. The smaller one on the left is the set which keeps in constant communication with President Harding when he is on the Mayflower, the boat assigned to the President's use. The larger set is used for scout purposes and has a longer range. Notice that it uses loop antennae, turned in different directions. 1st and 3d pictures copyright by Underwood & Underwood, N Y

ceiving set, one can select from two or even three programmes given many miles apart. A family in a little village in the woods can keep in touch with the world.

These broadcasting stations are maintained by the manufacturers at great expense, in order to increase the demand for instruments. Any one can listen in who can tune his receiver to the proper wave length. How long the manufacturers will find it profitable to pay singers, orchestras, lecturers and story-tellers, no one can say. Some one will continue to maintain them, however. Perhaps a small fee will be charged every purchaser of instruments; perhaps the government will collect a tax from every owner for the purpose of keeping up the stations; perhaps the government will keep them up just as it maintains schools. The plan is too valuable to be given up.

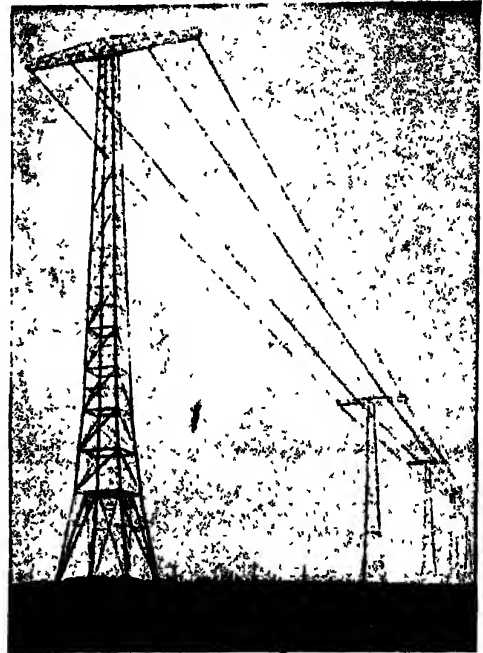
It is perfectly possible to arrange any auditorium, concert hall, or opera house, so that the lecture or the music can be sent out into the air to be gathered by listeners for hundreds of miles around, but there is no way of collecting pay for the service. The management objects to sending free, because many people would listen at home instead of paying admission to the performance.

WILL RADIO TAKE THE PLACE OF WIRES ALTOGETHER?

It is not likely that radio will soon take the place of wires entirely, for several reasons. In a great city there are many thousand telephone subscribers. It would be impossible to assign a different wave length to each individual, and when two stations are sending out the same wave length there is confusion. In addition, there is as yet no such thing as privacy in radio. Any message sent out can be caught by any receiver which can be tuned to the proper wave length, and so the most private conversation can be heard by all. It seems that for short distances we shall continue to telephone by means of wires.

On the other hand radio will be a great addition to wire systems. It is perfectly possible for a subscriber to call up his central by wire, ask to be connected with the radio station, which will call some one on a ship far out at sea to the radio room on the ship, and the two can then talk with ease. In fact something like this is done regularly. Santa Catalina Island is a popular summer resort over thirty miles from the California mainland. There is a

radio station at Pebbly Beach on the island, and another on the mainland at Long Beach, twenty-five miles from Los Angeles. Any subscriber in Los Angeles can talk with any subscriber on the island. The message goes in this way: from the subscriber to central (by wire); to Long Beach (by wire); to Pebbly Beach (by radio); to an island central (by wire); to the individual subscriber (by wire). In fact subscribers in San Francisco often talk to friends on the island by way of Los Angeles, thus adding two more links to the chain.

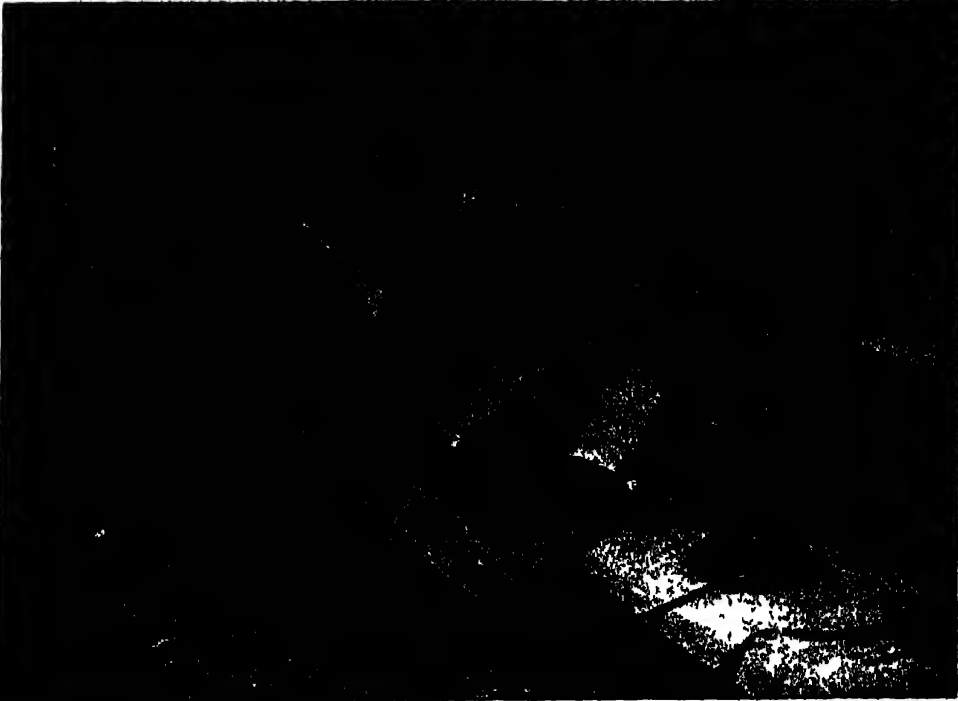


This is a small part of the aerial wires at the new radio station at Port Jefferson. Each of the steel towers is more than four hundred feet high. This station will communicate with Europe, South America and the Pacific Islands.

Picture from Underwood and Underwood, N. Y.

For long-distance work radio will become very important. It is expensive to set up and maintain a thousand miles of wire on poles. Powerful radio stations will cost much less, and will serve the purpose quite as well, if not better, for wires are constantly breaking on long lines. Explorers in the future will carry radio sets, and many lives will be saved as a result. It is probable that men will soon talk regularly across the ocean. Already the United States Government station at Arlington has talked with Honolulu, Hawaii, and it is likely that such communication will become common.

A TRAIN SET AND A BROADCASTING STATION



Elsewhere we have shown the process of telegraphing by radio from a moving train. The Delaware and Lackawanna Railroad has now equipped some of its trains with radio-telephone sets, so that messages can be sent and received from the train while in motion. Undoubtedly the ability to communicate with a train which has passed a signal will prevent many accidents.

Copyright Underwood and Underwood, N. Y.



This is the interior of the broadcasting station at Schenectady, N. Y., at the time the picture was made. The array of wires, tubes, batteries and switches is bewildering. Recently at a hotel in Santa Clara, Cuba, the guests cabled that they were dancing to the music sent out by this station nearly 1,500 miles away.

Picture from Underwood and Underwood, N. Y.

BOYS SHOW THEIR INTEREST IN RADIO



This youngster of five years is interested and has learned to tune the set so that the sounds are clear twice the amplifier of a loud-speaker which can be used with this set.



A schoolboy of Plainfield, N. J., only twelve years old, has made a receiver which will fit into an ordinary safety match box. He and his brother, both Boy Scouts, are listening to a concert.



This fortunate youth can attract guests and interest any of his friends who come to visit him. By using the headphones instead of the little speaker they do not disturb other members of the household. Some of the best work in radio is being done by youthful amateurs, and the results will doubtless show in many improvements as they grow older. Upper pictures copyright by Underwood & Underwood, N. Y.; lower from Brown Bros.

GENERAL INDEX TO THE BOOK OF KNOWLEDGE

For titles of poems or first lines see Special Poetry Index following the General Index. Authors' names are in both the indexes.

THIS Index, containing about twenty-five thousand entries, will enable you to find very quickly everything contained in *The Book of Knowledge*. It is not arranged exactly like an ordinary index, for *The Book of Knowledge* is not like any other book in the world. The book does not contain all the accumulated knowledge of the ages, but those things which it is most important to know, arranged so that they can be quickly and easily understood. Like an ordinary index, it is arranged alphabetically.

Many subjects are indexed twice or even three times. For example, you wish to know something about the Sun: look for the word and you will find dozens of references to the Sun and its work. Under the word *Earth* you will easily find the story of the Sun and the Earth together. You will find Hockey in its place under the letter *H* and also under *Games*. You will have little trouble if you think for a second before you look.

The Special Poetry Index will prove a great help. The names of the authors are in the General Index under their proper letters. They are also found in the Special Index and under each name are the titles of the poems by that author. Suppose you do not know an author's name: the titles of the poems are given in their proper place according to the first important word, and the first lines according to the first letter of the first word.

The book contains nearly ten thousand pictures, and, of course, only the most important could be indexed separately, but you will have little trouble in finding what you want. Almost every article is illustrated, and if you look in the index for the most important word in the subject you are likely to find pictures on or near the pages to which you are directed.

Think of what you want and look under the most important word. If you want a person, look under his name; if you want a country, look under its name. Everything is indexed under the word you are most likely to think of. For Poetry, see the Special Poetry Index.

The black-face figures give the volume number, and the light-face figures give the page number.

A

- A, what it represents, 3-688
A. B. C., countries of South America, 20-5361
A B C, how to learn, 1-269
A. D., meaning of letters, 1-206
Aachen: see Aix-la-Chapelle
Aah-top, Queen, jewels of, 20-5318
Aar, river in Switzerland, 12-2984, 2986; 22-5843, 5846
Aardvark, an animal, 4-1017-18, 14-3668
Abaca: see Manila hemp
Abana, river of Asia, 23-6105
Abbas, Shah of Persia, 15-3862-63
"Abbe Constantine", by Haldéy, 18-4751
Abbey, Edwin A., American painter, 16-4247-48
 pictures of, 16-4217
Abbey Craig, and Wallace, monument, 3-770
Abbeys, in England, 13-4791
 in Switzerland, 12-2986
"Abbot", story of the novel, 6-1496
Abbots, of Great Britain, 18-4791
Abbotsford, home of Scott, 6-1501; 9-2323
Abbott, Sir John, premier of Canada, 5-1281
Abbott, Peter, slept in coronation chair, 18-4688
Abbreviations, meaning of common, 21-5667
Abd-el-Kader, Algerian patriot, 15-4025
Abdomen, of ant, 11-2970
 of the body, 7-1648, 9-2363; 21-5622
Abdul Hamid I, returned manuscripts of the Corvina, 21-5656
Abdul Hamid II, Sultan of Turkey, 13-3214
A Becket, Thomas, Archbishop of Canterbury, 2-492, 3-592-93; 18-4796
 tomb of, 18-3938
Abelard, Peter, monk, and Héloïse, 15-4034
Abenakis, Indian tribe, 11-2784
Aberdeen, Earl of, governor of Canada, 5-1281
Abernethy, John, anagram from, 19-5037, 5133
Abney, Sir Thomas, sheltered Isaac Watts, 8-2014
"Abode of Snow": see Himalaya Mountains
Abolitionists, against slavery, 8-2042
Aboukir Bay, naval battle of, 14-2695, 17-4864
 see also Nile, battle of
Abraham, and Egypt, 18-4848
 and Mesopotamia, 15-3855
 and sacred stone of Mecca, 12-3029
 donkeys of, 23-6066
 flight of, 19-4958, 4962
 Jewish leader, 24-6329
Abraham, Plains (or Heights) of, 1-224, 3-559; 4-899
Abraham Lincoln, ship, in "Twenty Thousand Leagues," 19-5049
Abraha: see Abraham
Abruzzi, Duke of the, 21-5457
Abshalom, death of, 24-6330
"Absentee", by Edgeworth, 10-2621
Abu Bekr, a caliph, 15-3858
Abyssinia, history of, 2-298, 16-4297, 4306
Acacia, food of giraffe, 4-1015
 the false: see Locust
Academic Group, at Annapolis, 18-4742
Academus, Greek hero, 22-5770
Academy, origin of name, 22-5770
Academy of Fine Arts, in New York, history, 16-4218
Academy of Sciences, of Paris, and perpetual motion, 14-3590
Acadia, history of, 3-555-59; 4-893, 896, 898, 20-5386; see also Nova Scotia
 see also Maritime Provinces
Accidents, what to do in, 19-5032
 see also First-Aid, lessons in
Account of Washington's disbursements, 6-1390
Achenes, a type of fruit, 16-4205
Achilles, Greek hero, 1-73, 78, 4-980
 painting of myth, 7-1688
Achroites: see Tourmaline
Acid, acetic: see Vinegar
 carbonic, 2-416; 7-1891; 10-2539, 19-5033; 24-6351
 carbonic, 7-1811, 1817; 10-2654; see also Carbon dioxide
 citric, 7-1815; 18-4816
 formic, 3-816; 11-2970
 hydriodic, 7-1813, 1817
 hydrobromic, 7-1813
 hydrochloric, 5-1317; 7-1695, 1813-14, 1817; 9-2364, 2367, 11-2730
 hydrocyanic: see Acid, prussic
 hydrophoric, 7-1813
 malle, 7-1815; 18-4816
 muriatic: see Acid, hydrochloric
 nitric, 5-1317; 7-1814-17, 10-2654, 19-4875
 nitrous, 7-1814
 of ants, 17-4356
 oxalic, poisoning by, 19-5033
 picric, from gas-making, 2-416
 prussic, 4-1021; 6-1432, 7-1793, 1813-17; 17-4580, 18-4891
 sulphuric, 7-1814-17, 8-2166, 9-2428, 15-3828
 sulphurous, 7-1814
 uric, of the body, 7-1815
Acids, burns from, 19-5032
 ejected by insects, 13-4454
 in fruit, 18-4815
 in mouths, 8-2079
 in sour milk, 4-914
 poisoning by, 19-5033

GENERAL INDEX

- Acids**, to remove stains of, 2-488
what they are, 7-1813
- Aconitum**, **Mountain**, in South America, 15-3922
- Acorns**, as food, 13-3257; 15-3896; 21-5432
cup, for boats, 15-3900
planted by blue-jays, 2-2213
- Acropolis**, character of, "Marie Queenie," 3-699
- Acres**, and the Crusaders, 6-1654
- Acropolis**, of Athens, 7-1819, 13-3240; 20-5199, 205
- "Across the Chasm,"** by Magruder, 6-2103
- Acrostics**, 21-5523
- Act**, legislative and supreme court, 6-1437
- Action and reaction**, 13-3430; 18-4812
of piano, 5-1089, 1093-94
poetry of, 5-1153
- Actium**, battle of, 22-5790
- Acton Bell**: see Brontë, Anne
- Actors**, and moving pictures, 20-5138
in Shakespeare's time, 21-5582
- Adam**, in "Paradise Lost," 22-5679
- Adam**, Shakespearean character, 3-638
- Adam**, style of furniture, 23-6177
- Adam**, Robert, architect and designer, 23-6173
- Adamant**, meaning of, 12-3230; 24-6380
- Adamant**: see Diamond
- "Adam Bede,"** by Eliot, 10-2626
- Adams**, Abigail, wife of John Adams, 2-399, 400, 7-1690
- Adams**, Herbert, American sculptor, 18-4875, 20-5262
- Adams**, John, administration of, 10-2436; 13-3488-89
and Declaration of Independence, 17-4468
as vice-president, 6-1392
from Massachusetts, 9-2382
incidents in life of, 4-1003, 6-1388
president of United States, 2-100, 3-782; 6-1396, 1436; 7-1690, 12-1053
- Adams (John C.)**, English astronomer, 9-2394
- Adams**, John Q., administration of, 10-2439, 13-3488, 3190
from Massachusetts, 9-2382
president of the United States, 3-785, 7-1838
- Adams**, Mrs. John, or Abigail Smith Adams, 10-2437
- Adams**, Samuel, American patriot, 4-999; 6-1392; 20-5399
- Adams**, Sarah Flower, hymns of, 8-2016
- Adaptation**, what it is, 12-3097
- Adder**, poison fangs, 1-170
various kinds of, 6-1384
see also Crait, Death-adder
- Adder's-Tongue**, a flower, 11-2879, 2881
- Addison**, Joseph, English writer, 18-4723-25
poems: see Poetry Index
- Addresses**, on letters, 13-3410
- "Address to a Mouse,"** by Burns, 23-6032
- "Adelaide,"** a song, 13-3292, 14-3772
- Adelaide**, capital of South Australia, 6-1372, 1374
- Adelle Land**, in the Antarctic, 21-5464
- Adelphi**, part of London, 23-6173
- Aden**, Gulf of, 16-4298
- Adenoids**, in nose, 24-6234
- Adige River**, in Italy, 17-4357
- Adirondacks**, sanitarium in, 22-5950
- Adlai**, became Samuel Crowther, 11-2942
- Adjective-letter**, a game, 20-5348
- Adjutant**, bird, 8-1972, 1975-76
- Adler**, Felix, lecturer, 24-6337
- Admiral**, a butterfly, 12-3011, 3013
full dress of English, 11-frontis.
- Admiral**, naval rank, 23-6214
- Admiral Monbow Inn**, in "Treasure Island," 14-3630
- Admiralty**, in Petrograd, 15-3800
- Admiralty**, British, and Ronald's telegraph, 17-4440
work of, 14-face 3574
- "Adonais,"** by Shelley, 23-6036
- "Adonis,"** Shakespeare's, 7-1688
- Adour River**, 7-1744
- Adrian IV**, pope of Rome, 16-4796
- Adriana**, Shakespearean character, 3-639
- Adrianople**, history of, 12-3190
- Adriatic Sea**, part of the Mediterranean, 5-1167; 12-3078, 3184; 21-5651
- Adventure**, ship in "Gulliver's Travels," 5-1337
- "Adventures of Huckleberry Finn,"** by Mark Twain, 6-1608, 1620
- "Adventures of Bernard the Fox,"** 21-5569
- Advertisements**, contest, 5-1308
stamp tax on, 4-995
- Aedes Calopus**: see *Stegomyia fasciata*
- Aëtes**, king of Colchis, 1-204
- Aegean Sea**, of Greece: see Greece, glory tha was
- Aëgeon**, Shakespearean character, 3-638
- Æmilia**, Shakespearean character, 3-638
- Æneas**, Greek legendary hero, 1-76; 20-5272, 5280, 5308
- "Æneid,"** by Virgil, 1-76; 20-5308-09
- Ænion**, king of Chios, 13-3373
- Æolians**, Greek tribe, 20-5202
- Æpyornis**, extinct bird, 6-1502, 1504
- Ærators**, for aqueduct, 20-5195
- Ærolite**, the Calico, 10-2546
- Æroplanes**, and submarines, 22-5860
cloth for, 19-4886
development of, 1-174
flight of, 1-180; 14-3589; 22-5871
military, 1-182
see also Airships, Balloons, Flying-machines
- Æsculapius**, legendary physician, 18-4626
- Æsop**, fables of, 2-503; 3-580; 4-891, 7-1809, 8-1991; 9-2179, 2317, 2403; 11-2893, 2963, 12-3096, 3166; 13-3370, 3304; 15-3878, 1076, 17-4346; 18-4866
in French, 17-4347; 18-4798, 4854, 21-5532
- Æsop**, the fable-writer, 11-2936, 2938; 20-5204
- Ætna**, Mt., volcano, 18-4694
- Aforestation**, meaning of, 22-5811
- Afghanistan**, bread in, 5-1132
gems from, 24-6381, 6383
history of, 15-3923
map of, 15-3926
state of, 15-3855
- Afghans**, costume of, 15-3931
in India, 6-1636; 7-1714
in Persia, 15-3862
- Africa**, animals in, 1-152, 159-60; 2-390, 410, 412, 414, 3-625-32, 681-82; 13-3361, 3364; 22-5801, 23-5999-6000
ants of, 11-2972, 2974
Arabs in, 15-3858
birds of, 4-1013; 6-1504, 1557, 1561, 1563-64, 7-1759, 1763, 1901; 8-1971, 1975-77
cotton in, 9-2384
deserts and forests, 12-3127-28
division of, 16-4297
ebony from, 19-5034
explorers of, 2-297
fishes of, 10-2479-80, 2709
flowers of, 20-5237
fruit from, 3-650-51, 19-5072
gold of, 20-5318-25
horse in, 23-6063
insects of, 12-3201-03
Kafir corn in, 23-5968
malaria in, 22-5723
map of, 2-299, 16-4299
marram-grass in, 12-3062
natives of, 7-1890; 16-4080
nuts of, 8-1998
ostrich-farms in, 6-1506
reptiles of, 5-1210-11, 1213-15
Roosevelt in, 9-2380; 13-3495
rubber grown in, 14-3569; 22-5795-98
serpents of, 6-1381-84
slavery in, 17-4578
statue of, by Theed, 19-5040
unknown tracts in, 9-2352
waterfalls in, 13-3400
see also Carthage, South Africa
- Africanus**: see Scipio Cornelius
- After-images**, on the retina, 12-3046
- Agamemnon**, Greek hero, 1-73
- Agaric**, fairy-ring, poisonous fungus, 19-face 4880
see also Mushrooms
- Agaricus**: see Mushrooms
- Agate**, precious stone, 15-2798; 24-6377
- Agatha**, St., story of, 4-1029
- Age**, Augustan, 2-536
golden, 17-4536
guessed by cards, 22-5738
of tree, 4-919
old, 11-2909
- Agent**, in India, 6-1638
- Age of Innocence**, painting, by Reynolds, 13-frontis.
- Ages**, the dark, 16-4172
- Agesander**, Greek sculptor, 16-4178
- Agincourt**, battle of, 3-774
- "Agnes Grey,"** by Brontë, 10-2625
- Agnes**, Lady, character in "Pendennis," 13-3516
- Agnes**, of the Snow, child-heroine, 13-3295
- Agnes**, St., statue of, 18-4675
- Agouti**, an animal, 3-679, 682

GENERAL INDEX

Agra, city in India, 6-1636
Agramonte, Aristides, and yellow fever, 12-3235-36
Agricola, in England, 1-210; 2-539
Agriculture, colleges for, 17-4570
in Alaska, 18-4058
in Canada, 21-5546; 22-5780
in France, 9-2424
in Spain, 18-3847
of Indians, 1-16
Agriculture, College of, in Canada, 21-5610
Agriculture, U. S. Department of, 6-1437; 7-1692
Agrimony, flowers of, 16-4134
see also Hemp-agrimony
Agrippina, Roman empress, 2-538
Aguecheek, Sir Andrew, Shakespearean character, 2-446
Aguinaldo, Emilio, rebellion of, 8-2152
Ahasuerus, King, thought to be Xerxes, 20-5152
Ahas, king of Judah, 19-4985
Ahmed, Prince, in "Magic Carpet," 7-1710
Ahmedabad, temples of, 12-3025
Ahriman, bad god of darkness, 12-3030
Ahwah, Eskimo doll, 12-face 3434, 3437
Al, a sloth, 4-876
Albek, Mameluke captain, 11-2940
Albonito, town in Porto Rico, 8-2157
"Aida," by Verdi, 13-3294
Aidan, missionary to England, 2-468; 21-5552
Ailsa Craig, legend of, 9-2403
Ainos, early Japanese, 15-3803
Al, action of compressed, 8-2243
acts as blanket, 8-812
and blood, 6-1430
and mirages, 23-6067
and sound-waves, 17-4579; 19-4870, 4879
as food, 11-2728
as supporting medium, 14-3568
at a height, 22-5814
compressed, 17-4469, 22-5862-64; 23-6200, 6209; 24-6267, 6316
currents of, 16-4231; 22-5874
density of, 4-911, 916, 22-5870
different levels of, 4-1084; 22-5870
disappearance of, 17-4688
dissolved in water, 14-3780
expansion of, 17-4393-94; 23-5989
experiments with, 22-5921
fresh, 7-1805; 18-4627
fresher after rain, 7-1877
gases of, 4-905, 5-1243, 1246
health and, 4-908, 7-1803
hearing and, 15-4021
held about earth, 19-5026, see also Atmosphere
hot before thunder, 7-1653
in Jack's House: see Jack, house of
in seaweed, 19-5020
in the lungs, 7-1650
last man and, 22-5890
lightness of impure, 23-5991
liquid, 3-608; 5-1245, 16-4083, 4086
never used up, 8-2084
none on moon, 8-2208
part of the earth, 2-324; 3-647
particles in, 13-3387
pressure of, 5-1318, 6-1589; 9-2246, 10-2536; 15-3977, see also Pressure, atmospheric
purified by forests, 12-3127
rariness of, 12-3229
resistance of, 4-1086; 14-3572, 3674
sailing in a sea of, 1-171
seeing the, 5-1160
specific gravity of, 15-3828-29
stops light, 14-3679, 3681
stuff in earth and air changing places, 5-1160
takes up light and heat, 4-1084
temperature of different levels, 8-2082
tides of, 1-43
water in, 10-2537
waves of, 2-517; 3-813; 4-911-12, 1081-85, 13-3389, 14-3774
weight of, 5-1159; 6-1588
what it is, 2-283; 4-851, 955; 5-1161
wonderful river of, 24-6306
Air-bladder, of fish, 10-2602
Air-bladder, development of, 11-2716
Air-brake, of lungs, 24-6306
Air-chambers, in ears, 15-3916
Air-pressure, and vacuum, 8-2010, 2162
Air-pump, and vacuum, 8-2010, 2162
emptying, 16-4087
Air-room, a submarine, 24-6312
Air-sacs, of birds, 6-1503; 7-1646, 1761
Airship, British, 24-6276
improvement of, 1-171-73
Air-tube, for diver, 24-6314, 6315

Air-vessels: see Air-sacs
Airy, Sir George Biddell, English astronomer, 7-1675, 1682; 10-3496
Aix-la-Chapelle, German town, 11-2766; 19-5002
Aix-la-Chapelle, *see* **of**, and effects, 8-553; 4-395
Akbar, the Great Mogul, 7-1715-16
Akela, a wolf, in story of Mowgli, 21-5438
Alba, a Jewish rabbi, 17-4416
Akka, Asiatic country, 19-4980
Akkadian, language, 19-4968
Al, Arabic for "the," 8-2250
Alabama, admission of, 7-1836; 13-3490
boll-weevil in, 12-3205
capitol of, 23-5966
cotton manufactures of, 10-2684
Creek rising in, 6-1399
description of, 23-5960
flower of, 23-5815
iron of, 10-2678; 23-5689
secession of, 8-2044; 13-3492; 23-5957
Alabama, ship, 8-2049, 2052
Alabaster, what it is, 7-1816
Aladdin, and the Wonderful Lamp, 1-89
Alamogordo Creek, defeat on, 4-398
Alarcon, Pedro Antonio de, Spanish writer, 20-5316
Alaric, Gothic leader, 3-635
Alarm-clock, 6-1538
Alaska, and cadets, 18-4736
birds of, 7-1646, 1902
bought, 13-3493
fish in, 15-4060
fisheries of, 10-2703
furs in, 18-4833, 4837; 19-5078
glaciers in, 10-2531
gold in, 10-2678, 20-5319
history of, 8-2147-49, 10-2443; 15-4057
purchase of, 15-1058
school-republic in, 24-6390
size of, 9-2382
volcanoes in, 1-13
Washington's birthday in, 17-4466
why India is hotter than, 4-1084
Albani, Madame, a singer, 20-5296
Albania, costumes of, 13-3245
history of, 1-132; 13-3247
Albany Duke of, Shakespearean character, 3-641
Albany, history of, 2-281; 18-4766, 4768
see also Fort Nassau
Albany Regency, political ring, 18-4767
Albatross, a bird, 7-1639-41, 22-5753; 23-6034
Albemarle, Duke of, 2-527, 531
see also Monk, George
Albert, character in "Count of Monte Cristo," 17-4435
Albert, emperor of Austria, 11-2898
Albert I, king of the Belgians, 14-3548
Alberta, cattle ranges of, 5-1277
education in, 21-5401
Indians in, 10-2577, 2579
population of, 14-3731
productions of, 23-6092, 6094
province of, 1-230, 5-1280; 8-1918, 14-3732, 21-5612
trees of, 14-3731
university in, 21-5402
woman suffrage in, 6-1154
Albert Harbor, in Arctic, 8-1914
Albertite, kind of coal, 21-5548
Albert Land, in Arctic Canada, 8-1914
Albert Memorial, in London, 19-5040, 5045
Albert Nyanza, Lake, discovered by Baker, 2-302; 16-4306
Albi, cathedral of, 9-2422
Albion, name for England, 6-1588
Alburs, battle of, 17-4366
Albumen, the white of egg, 6-1588; 12-3234; 13-3275; 21-5513
Albumins, are proteins, 9-2366
Alchemists, of old, 8-1960
Alchemy, an unreal science, 8-1960
Alcibiades, Greek statesman, 5-1320
Alcohol, a poison, 7-1889-90, 18-4691
and Marathon runner, 12-3181
chemistry of alcohols, 7-1889
cohesion of, 3-608
effects of, 4-1021; 6-1432, 1461, 1589; 7-1652; 17-4376; 19-4879; 21-5440; 23-6016
enemy of life, 21-5439
for drying purposes, 8-1194
from sugar, 23-5992
habit of, 20-5291
in milk, 11-2828

GENERAL INDEX

- Alcohol**, in thermometers, 8-1938; 17-4395
made by yeast, 4-821, 909; 12-3233
not a food, 12-3183, 13-3416
smells of alcohol, 18-4636
specific gravity of, 15-3827, 3828
spot on wood, 21-5644
- Alcor**, a star, 10-2639, 2645
- Alcott, Bronson**, philosopher, 8-2099
- Alcott, Louisa M.**, American writer, 8-2097-98; 18-4670, 20-5169
- Alcuin**, a monk, 8-2068
- Aloyone**, a Pleiade, 13-3374
- Aldebaran**, a star, 9-2250, 10-2642, 2645
- Aldehydes**, chemical substances, 7-1891
- Alder**, a tree, 13-3262, 20-5352
see also Black-alder, Clethra
- Aldermire Copse**, in "Water Babies," 15-3832
- Aldrich, Thomas Bailey**, American author, 6-1621
poems. see Poetry Index
- Alecto**, ship, 10-2489
- Ale-hoof**: see Ground-ivy, 17-4355
- Alemanni**, in Switzerland, 12-2984, 2986
- Alert**, ship, 6-1398, 21-5460; 24-6238
- Alentian Islands**, end of America, 8-2147
foxes on, 19-5078
- Alexander I**, czar of Russia, 14-3728
- Alexander II**, czar of Russia, reign of, 13-3242; 14-3729, 15-3805
- Alexander III**, czar of Russia, and Finland, 15-3805
- Alexander**, king of Greece, 13-3247
- Alexander I**, king of Scots, reign of, 12-3134
- Alexander II**, king of Scotland, reign of, 12-3136
- Alexander III**, king of Scotland, reign of, 12-3136
- Alexander VI**, pope of Rome, 19-5100, 5102
- Alexander the Great**, and Alexandria, 22-5785
and Judah, 24-6332
emerald worn by, 24-6380
life of, 5-1323-26; 7-1714; 16-4172; 18-4852; 20-5147, 5149, 5154, 5209
statue of, 21-5539
stories about, 15-3936; 21-5565, 5567-68
- Alexander, Mrs. Cecil Frances**, hymns of, 8-2016
poems: see Poetry Index
- Alexander, J. W.**, American painter, 7-1688; 18-4252, 4256, 4258
- Alexander, Sir William**, and Nova Scotia, 3-558; 21-5543
- Alexander Archipelago**, off North America, 8-2148
- Alexandria**, bishop of: see Athanasius
- Alexandria**, Egyptian seaport, 16-4302, 4304, 18-4852; 19-5039, 22-5785
- Alexandria Bay**, pleasure resort, 23-6123
- Alexandria Canal**, building the, 21-5123
- Alexis**, czar of Russia, died from eating mushrooms, 19-4883
- Alfalfa**, a forage plant, 9-2384; 22-5716
- Alfred**, a chief, 2-465
- "Alfred"**, a play, 14-3766
- Alfred**, problem concerning, 2-491
- Alfred**, ship, 12-3004; 21-5192
- Alfred the Great**, king of England, and English books, 15-3935
and Onthore, 21-5456
heirs of, 12-3133
incidents in reign of, 2-465, 468; 3-592, 595; 5-1234; 14-3652
- Algeria**, Arabian patriot of, 15-4025
heliographing in, 17-4441
in Africa, 16-4308
- Algiers**, city of Africa, 16-4301, 4307
fort of, 23-6022
French colony, 9-2425-26
in "Tartarin of Tarascon," 18-4648.
pirates of, 13-3490
- Algol**, a star, 10-2640, 2643, 2645
- Algonquin Park**, in Ontario, 1-226
- Algonquins**, Indian tribe, 1-21; 3-556, 10-2575; 11-2784
- Alhambra**, palace of, 13-3342, 3348; 22-5849
- Ali**, a caliph, 15-3858
- Ali**, prince in "Magic Carpet," 7-1710
- Ali Baba**, and the Forty Thieves, 1-209
- Alice**, and Lewis Carroll, 6-1477, 1482
- Alice**, heroine of Cooper's novels, 1-197
- "Alice's Adventures in Wonderland"**, 6-1476, 1482; 11-2953; 12-3089, 3156
- Allen and Sedition Laws**, 6-1398; 13-3489
- Ali Pasha**, character in "Count of Monte Cristo," 17-4432
- Alisan, Leon**, poems: see Poetry Index
- Alison, Mrs.**, domestic in "Old Mortality," 7-1777
- Alkali**, burns from, 19-5032
free in soap, 8-2251; 12-3226
poisoning by, 19-5033
what it is, 7-1813, 1815
- Alkalies**, or bases, 12-3386
- All**, we want, 13-3509
- Alla**, king of Northumberland, 2-495
- Allah**, Mohammedan God, 6-1549, 12-3030
- Allaneston**, in "Water Babies," 15-3839
- Allan, Sir William**, his picture of Sir Walter Scott, 9-2323
- Allan-a-Dale**, and Robin Hood, 10-2631
- Allegheny Mountains**, ants of, 11-2968
- Allegheny River**, Washington crossing, 3-780
- Allegory**, poetic, 3-697
- Allegri, Antonio**: see Correggio
- Alleluia**: see Wood-sorrel
- Allen**, and piano-frame, 5-1088
- Allen, Ethan**, and Ticonderoga, 4-1000, 7-1832
statue of, 19-5006
- Allenkakut River**, in Alaska, 8-2149
- Allerton, Ellen F.**, poems: see Poetry Index
- Alley-Foot**: see Carey, Henry
- All-father**: see Odin
- Alliance**, ship, 12-3006
- Allies**, during Great War, 13-3247
- Alligator**, reptile, 1-12, 57, 5-1213, 1221
skin for gloves, 12-3106
- Alligator-wood**: see Liquidambar
- Altingham, William**, poems: see Poetry Index
- Aliteration**, use of, 2-477
- Allium**, a plant, 7-1738
- Allosaurus**, prehistoric animal, 20-5334
- Alloys**, of metals, 7-1888
- Allston, Washington**, American artist, 16-4218-19
- "All's Well that Ends Well"**, by Shakespeare, 2-328
- Alma**, passage of the, 14-3729
- Almagro, Diego del**, and Peru, 17-4510
- Alma Mater**, statue, by French, 18-4670
- Almanacs**, history of, 7-1673; 8-1960
stamp tax on, 4-995
- Alma redemptoris**, hymn, 2-499
- Alma-Tadema, Miss Laurence**, poems: see Poetry Index
- Alma-Tadema, Sir Laurence**, his painting of Cleopatra, 22-5787
- Almond**, a nut, 8-1999, 2004
burnt almonds, 14-3652
in Morocco, 16-4301
- Almonry**, Cuxton's press in, 14-3613
- Almos**, Hun leader, 11-2898, 21-5652
- Aloe**, used as a charm, 3-796
- "Alone"**, by Harland, 8-2098
- Alphabet**, curious things about, 13-3433
deaf and dumb, 20-5251
how to learn, 1-259
Morse, 17-4444, 4446
of flags, 14-3783-84
origin of, 3-688; 13-3482
wizard's, 21-5452
- Alphard**, a star, 10-2639
- Alpheus**, river-god, 12-3063
- Alphonso XIII**, king of Spain, 13-3348
- Alpines**, cultivation of, 8-1944
- Alps**, and Italian irrigation, 21-5416
boring through, 24-6259
flight over, 1-177
forestry in, 12-3129
Hannibal crossed, 20-5275-76
mountains, 22-5841
Napoleon crossing the, 9-2286, 2288, 17-4362
of Scandinavia, 14-3651
passes of, 12-3073
picture, 2-431
snow and ice in, 10-2530-32
the Swiss, 12-2981, 2988
- Alsace**, history of, 9-2290; 10-2559, 2600
- Alsace-Lorraine**, crown-land of, 10-2600
history of, 11-2768
- Altai Mountains**, in Asia, 15-3798, 3023, 3026
- Altair**, a star, 10-2641
- Altamont, Colonel**, character in "Pendennis," 13-3520
- "Alton Locke"**, by Kingsley, 9-2328
- Alum**, for Alpine scene, 18-4704-06
from coal-tar, 2-416
- Aluminum**, lightest metal, 17-4159
production of, 10-2680
specific gravity of, 15-3828
spoons of, 18-4806
- Alva, Duke of**, and the Netherlands, 1-134; 14-3544
ruler of Spain, 20-5225

GENERAL INDEX

- Amadas, Philip, and Raleigh, 24-6271**
Amalgams, of mercury, 7-1888
Amantia, poisonous mushroom, 19-4883
 see also Death-cup, Fly-mushroom
Amaryllis-family, of plants, 19-4654; 20-5230
Amasis, king in "Egyptian Princess," 23-5951
Amavia, character in "Faerie Queene," 3-699
Amazon-ants, 11-2972
Amazon River, in South America, 4-867; 17-4511; 18-4606, 4610
Amazons, legendary women, 2-327, 497
 queen of, 4-980
 see also Hippolyte
Ambassador, appointment of U. S., 6-1435
 French, and Elizabeth, 4-857
 tried by Supreme Court, 6-1437
Ambassadors, Hall of the, in Alhambra, 13-3342
Amber, and electricity, 3-688, 6-1449, 8-2161; 20-5355
Ambergris, product of whale, 4-1069, 1071
Ambrase, St., made a bishop, 15-1030-31
 wrote hymns, 3-2013
"Amelia," by Fielding, 7-1750
Amelia Court House, Lee St., 8-2054
Amendments, to the United States Constitution, eleventh, 6-1437-38
 twelfth, 6-1437-38
 thirteenth, 6-1438
 fourteenth, 6-1438
 fifteenth, 6-1438
 sixteenth, 6-1437-38
 seventeenth, 6-1437
Amenhotep III, and Egyptian art, 16-4172
Amenophis II, king of Egypt, 23-6189
Amenophis III, Egyptian king, 19-4962
America, and Charles V, 16-2656
 and Germany, 10-2555
 and war of Spanish succession, 10-2560
 animals in, 1-55, 155-59, 162; 2-405-08, 110, 412, 414, 3-630-32, 686, 802; 4-874, 878, 1011, 1016, 1018, 1073-75; 13-3362-64; 21-5576, 22-5801
 birds of, 7-1755; 8-1972, 1976, 1978, 1980, 9-2218, 2338; see also Birds
 British colonies in, 21-5410
 building homes in the new land, 2-521
 butterflies and moths of, 12-3019-21
 coast eaten away, 12-3033
 colonies in, 4-1035
 discovery of, 1-62
 disease in, 11-2801-02
 early settlements, 2-272, 523-25
 explorers and what they found, 2-271
 first legislature of, 2-521
 fish of, 10-2709
 flag of, 7-1661
 fossils of, 14-3667
 fruits in, 3-619
 gems of, 24-6379-83
 Germans in, 11-2771
 gold of, 20-5318-21, see also Alaska, California, etc.
 history of, 16-4077-78
 horse in, 23-6063, 6068
 ice-sheet covered, 1-14; see also Glaciers
 insects of, 13-3301, 3306, see also Insects
 iron in, 22-5688
 Jews in, 24-6338
 land before the white men came, 1-9
 map of forests and deserts, 12-3129
 monasteries of, 15-4029
 mussels in, 15-3852
 named, 1-65
 natives of, 1-15
 nuts of, 8-1997
 piano-making in, 5-1088
 pioneers of, 24-6249
 plants of, 18-4652
 possessions overseas, 8-2147
 reptiles of, 5-1213-14, 1219-21
 Revolution, see Revolution, American
 rubber grown in, 14-3569
 serpents of, 6-1384-85
 settlers in, 2-531
 shrubs of, 17-4567
 sponges from, 18-4269
 statue of, 18-5040
 struggle for the continent, 4-893
 taxation of colonies, 4-950
 time-belts of, 3-688
 trees of, 20-5337, 21-5429
 undeveloped folk in, 21-5441
 unknown tracts, 9-2352
 war with France, 4-993
 see also Canada, Columbus Day, United States, etc.
"America," by Smith, 12-3053
America, an engine, 3-605
American Fur Company, and the West, 7-1840
American League, and baseball, 20-5247
American Museum of Natural History, in New York, 19-5018
Americans, in Canada, 22-5946
Amerind, American Indians, 1-16
Amethyst, precious stone, 24-6377, 6379
Amethyst Mountains, in Texas, 24-6379
Amherst (Jeffrey), Lord, governor of Quebec, 3-755, 4-898
Amici, Giovanni Battista, Italian astronomer, 8-2332
Amici, Edmondo de, Italian writer, 19-4992; 20-5315
Amiens, cathedral of, 9-2422; 10-4173
 French city, 9-2422
Amisbühl, Swiss village, 22-5844
Ammon, temple of the god, 18-4840, face 4848
Ammonia, anhydrous, in ice-making, 14-3762-63
 cleanser, 9-2251
 from gas-making, 2-416
 in coking, 22-5689
 salts of, 13-3353
 volatile alkali, 5-1246; 7-1815
Ammunition, source of, 2-416
Amoeba, animal, 4-1020; 5-1121; 8-2077; 10-2472
"Among my Books," by J. R. Lowell, 6-1818
Amore, Lady, character in "Faerie Queene," 3-697, 701
Amorite, type of, 18-4847
Amory, character in "Pendennis," 13-3518
Amory, Blanche, character in "Pendennis," 13-3518
Amphibians, age of, 4-874
 group of vertebrates, 3-672-74; 5-1215; 10-2464; 14-3666
 origin of, 3-801
Amplitude, of sound, 19-4871, 5061
Amsterdam, port of Holland, 10-2604; 14-3538, 3540, 3542, 3546-47, 3548
Amu Daria, river in Asia, 15-3924, 3933
Amulet, stones used as, 24-6379-80
Amundsen, Capt. Roald, Arctic explorer, 9-2352; 21-5457, 5460, 5461
Amur River, in Asia, 14-3729, 15-3803
Amy, character in "Little Women," 9-2099, 20-5169
Anacharis; see Water-thyme
Anaconda, copper-works at, 10-2685
Anaconda, a serpent, 6-1380-81, 1387
"Anacreon in Heaven," tune of "Star-Spangled Banner," 12-3052
Anaesthetic, that produces sleep, 18-4632-33
 value of, 12-3228
Anase, Arab tribe, 23-6097
Anagrams, as a pastime, 19-5037
 from Shakespeare, 21-5452
 solutions of, 19-5133
Analysis, of spectra, 11-2739
 see also Spectrum, analysis
Anamorphoses; see Pictures, distorted
Anaphylaxis, a treatment for disease, 24-6368
"An Appeal to Heaven," motto, 21-5492
Anatolius, Saint, hymns written by, 8-2013
Anatomy, comparative, 4-866
 studies of, 18-4630-31
Ancestors, worship of, 1-18
"Ancestress," by Grillparzer, 13-3396
Anchises, Trojan hero, 20-5272
Anchor, of a ship, 18-4619-20
 riding at, 18-4619
 ship drags her, 18-4619
"Ancient Mariner," of Coleridge, 16-4112
Ancon, hospital, 21-5598-99
Ancon, ship, 1-84
Andalusia, province of, 13-3339-40
Andermatt, in Switzerland, 22-5847
Andersen, Hans, Danish author, 6-1478, 21-5474
 statue of, 14-3658
Anderson, Alexander, poems; see Poetry Index
Anderson, Major (Robert), defence of Ft Sumter, 3-2056
Andes Mountains, of South America, 7-1897; 17-4505, 4511, 19-5077
André, Major John, British spy, 15-3920-21
 monument to, 15-3921
Andrea Doria, ship, 12-3004
André (S. A.), balloon expedition of, 21-5460
Andrew, St., apostle, cross of, 4-1043; 5-1239; 9-2354; 21-5492
 crucifixion of, 9-2354
 in Scythia, 9-2351
 wrote hymn, 8-2013

GENERAL INDEX

Andrew II, king of Hungary, 11-2900; 21-5654
Androcles, and the lion, 18-4786
Andromache, wife of Hector, 1-74
Andromeda, a constellation, 10-2643, 11-2847
Andromeda, legend of, 4-1053; 13-3373
Andros, Sir Edmund, colonial governor, 2-533
Ane, et Jupiter, 21-5532
 et le Cheval, 18-4798
 et le Chien, 18-4798
Anemone, legend of, 12-3210
Anemone, a plant, 11-2880; 20-5228
 see also Rue-anemone, Sea-anemone, Star-flower, Wood-anemone
Aneroid: see Barometer, aneroid
Angel, of the dimples, 9-2177
 with the lute, 5-frontis
Angela, character in "Faerie Queene," 3-700
Angelica, the wild, 19-5092
Angelo, Fra. Italian artist, 11-2797; 15-4033, 4035; 19-5100; 22-5933
 use of wood-sorrel, 12-3066
Angel Monument: see Cawnpore, massacre of
Angelo, and Claudio's sister, 3-560
Angelo, Shakespearean character, 3-561
Angel of Death, statue, by French, 18-4670
Angel, and growling, 18-4693
 emotion of, 20-5189
Angle, how to draw angles, 2-481
 measurement of, 3-812
 size of, 11-2734
Angler, and the little fish, 15-8879
Angler-fish, description of, 2-377, 10-2607-08
Angles, children and Pope Gregory, 2-448; 12-3076; 18-4793
 European people, 2-465; 10-2549-50; 14-3652; 17-1370
Anglicans, in Canada, 14-3733
Anglo-Saxon, language, 17-4453
Anglo-Saxon Chronicle, written, 3-589, 592
Angola, Portuguese colony, 16-4308
Anguish, king of Ireland, and Tristram, 13-3282
Animalcules, skeletons of, 9-2410
Animals, age of, 9-2349
 alphabet of, picture, 1-259
 aquatic, 9-2404 bis, 2405
 arctic, 13-3251
 armored, 10-2611
 as Indian signs, 22-5874
 association in, 19-4996
 boring, 10-2615
 born blind? 7-1885
 brains of, 14-3687, 3689, 3691
 carnivorous, 8-2079, 2173
 carry seeds, 15-3813
 caught for zoo, 24-6241
 centre of gravity, 15-3844
 changes of, 10-2470
 classification of, 3-671
 cold-blooded, 3-671
 development of, 14-3668
 domestic, in America, 1-15, 17
 dreams of, 17-4488
 exhibits of, 20-5330
 eyes of vertebrate, 16-4261, 4263
 fat of, used for lamps, 3-669
 feeling of, 1-170
 first living, 2-377
 food of, 10-2472; 16-4111
 fought in Coliseum, 3-635
 fur-bearing, 15-4060; 19-5076
 hearing of, 15-3916
 herbivorous, 8-2079
 imaginary, 1-215
 in balloon ascent, 22-5810
 in race, 18-4612
 Indian stories of, 5-1105, 1110
 influence of food on, 13-3272
 intelligence of, 17-4587
 invertebrate, 10-2463
 killing for food, 13-3271
 ladder of life, 3-670, 674
 life of, 1-186
 living in the sea, 4-1066-67
 most like men, 3-625
 of potatoes, 5-1303
 of the sea, 9-2404 bis, 2405
 pain felt by, 18-4692
 partnerships of, 9-2408-10; 10-2612, 2614
 pictures of, as symbols, 13-3479
 prehistoric, 1-13, 15, 206
 preserved in Yellowstone Park, 3-587
 reasoning of, 18-4693
 rocks that look like, 5-1312
 sacredness of, 6-1638
 sacrifices to, 10-2579

Animals, sculptors of, 18-4670
 sensitive to weather, 12-2993
 some very strange beasts, 4-1011
 stuffed cloth: see Toy-Zoo
 summer and winter sleep of, 24-6371
 talk of, 5-1287; 6-1412; 21-5505
 temperature of, 4-873
 that change their coats, 13-3444
 that feed and clothe us, 2-405
 that fly and burrow, 3-801
 that lived before man, 1-50, 52
 that puzzle us, 4-873
 that serve man, 2-287
 that work for Nature, 1-151, 157
 that yield furs, 19-5072
 thought of, 6-1412
 unknown, 23-5997
 vertebrate, 8-2077; 10-2463
 warm-blooded, 2-377; 3-571-72
 wear light coats in snowy countries, 7-1792
 with wonderful coats, 13-3444-45
 young, 21-5638, 5661
Anis, a bird, 9-2343
Anjou, House of, in Italy, 12-3082
Ankle, bones of, 10-2571, 2573-74; 16-4201
 sprain of, 17-4383
Anklet, and the crows, 24-6292
Anna, of Bohemia, married Ferdinand of Austria, 11-2898, 2903
Anna, of Bohemia, married Richard II, 11-2902
Annals, of Stow, 21-5484
Annapolis, Md., naval academy at, 18-4735, 1741, 4743
Annapolis, Nova Scotia, history of, 20-5386, 21-5543
Annapolis Royal, village of, 21-5545
Annapolis Valley, in Nova Scotia, 1-223
An Arbor, university at, 17-4571
Anne, czarina of Russia, 14-3726
Anne (of Norway), married James I, of Scotland, 14-3662
Anne, queen of England, and the Duchess of Marlborough, 18-4686
 as Mrs. Bull, 9-2352
 character in "Henry Esmond," 13-3309
 incidents of life, 4-1040, 1043, 5-1113
 "Anne of Geierstein," story of, 8-1486
Annelids, tube-forming, 9-face 2404
Annexations: see Texas, history of
"Annie Laurie", song, 14-3769
Annals, flowers, 1-249; 3-617, 732, 15-3814, 4014
Annunciation, cathedral of the, 15-3802
Annunzio, Gabriele d', Italian writer, 20-5315
Anode, positive pole, 18-4805
Anopheles, malaria-carrying mosquito, 12-3201-02
Anselm, archbishop of Canterbury, 18-4798
Answers, magic, 8-2143
Antarctic, birds of, 6-1510, 7-1640-41
 explorations in, 9-2352, 21-5459
Antarctic Ocean, animals in, 4-1075
Antares, a constellation, 10-2641
Ant-eater, an animal, 4-874-75, 1016-17; 11-2967; 14-3668
 see also Reclina
Antelope, ship, in "Gulliver's Travels," 5-1333
Antelopes, animals, 2-411, 412; 11-2834
 capturing, 24-6244
Antennae, of ants, 11-2970-71
 of centipedes, 13-3355
 of insects, 12-3014; 22-5813
Anthem, British national, 9-2352
Anthems, of flowers, 5-1340; 16-4206
 of orchids, 17-4479
 see also Stamen
Anthous, walking, 12-3194
Ant-hills, building of, 11-2967
Anthony, Susan B., and woman-suffrage, 12-3121
Anthrax, disease of live-stock, 24-6364
Anticosti, island of, visited, 3-554
Anticyclones, cause of, 10-2536
Antietam, battle of, 8-2048
Antigone, sacrifice of the Thebans, 2-476
Antigonus, king of Macedonia, 20-5209
Antimony, a metal, 9-2428; 10-2680
 in Canada, 21-5548
Antioch, and the Crusades, 6-1552
 in "Ben Hur," 20-5259
Antiochus, of Syria, reign of, 1-127; 24-6332
Antipater, Idumean ruler of Jews, 24-6332
Antipholus, Shakespearean character, 3-638
Antipodes Islands, 6-1486
"Antiquary", by Scott, 6-1497; 7-1663, 1667
Antiseptic, camphor is an, 16-4117

GENERAL INDEX

- Antiseptic**, in hospitals, 24-3365
 meaning of, 2-2080
- Anti-slavery**, movement, 2-1616
- Anti-toxin**, for disease, 24-6308
- Antivari**, port of Montenegro, 13-3244
- Antlers**, of deer, 2-412
- Ant-lion**, an insect, 13-3301, 3305
- Antofagasta**, on the Chilean coast, 12-4606
- Antofagasta**, province of, 20-5366
- Antoinette**, a monoplane, 1-180
- Antonello**, Italian artist, 5-1174
- Antonines**, Roman emperors, 2-541
- Antoninus Pius**, emperor of Rome, 2-541
- Antonio**, of the Bridge, 5-1170
- Antonio**, Shakespearian character, 2-330, 446; 2-639
- Antonius, Marcus**, Roman commander, 2-441, 535
- Antony, Mark**, Roman general, 17-4535; 20-5280, 5308
- "Antony and Cleopatra,"** by Shakespeare, 18-4853
- Ants**, and boll-weevil, 13-3300
 and colors, 14-3778
 ant and the dove, 20-5288
 ant and the grasshopper, 9-2179
 as pests, 4-1018
 as pets, 15-3962
 communication of, 22-5813
 eggs of, 11-2969-70
 formic acid in, 3-816
 life of, 11-2965
 slaves of, 22-5813
 vision of, 16-4262
 see also Termites
- Ants'-nests**, rove-beetle in, 13-3306
- Antwerp**, kind of pigeon, 9-2217
- Antwerp**, port of Belgium, 14-3538, 3540, 3546; 23-6148
 printing in, 14-3611
- Anvil**, bone of the ear, 15-3912, 3914
- Anvil**, in "Table Round," 4-881-82
- Anxiety**: see Worry
- "Aorangi"**: see Cook, Mount
- Aorta**, an artery, 6-1597; 16-4201
- Aouda**, character in "Round the World," 19-4913
- Apaches**, Indian tribe, 1-16
- Apelles**, Greek painter, 17-4589, 18-4626
- Apennines**, mountains in Italy, 12-3074
- Apes**, and young, 21-5663-64
 ape and the wedge, 23-6133
 capture of, 24-6244
 centre of gravity of, 15-3884
 crying of, 20-5397
 language of, 15-4023
 man-like, 11-2830
 teeth of, 8-2078-79
 use of arms, 14-3600
 various, 3-625, 671
 see also Monkeys
- Aphides**, eggs of, 11-2971
 killed by other insects, 13-3299-3302
- Aphis**, cow of ants, 11-2969, 2971-73
- Apistus**, a fish, 10-face 2800
- Apollo**, and Cyparissus, 22-5775
 god of the sun, 6-1526
 temple of, near Phigaleia, 16-4171
- Apollodorus**, architect, 19-5011
- Apollyon**, character in "Pilgrim's Progress," 5-1128-29, 1181
- Apostate**: see Julian, the Apostate, Wentworth, Thomas
- Apostles**, in England, 9-2351
- Apostle to the Indians**: see Eliot, John
- Apostrophe**, and will, 22-5743
- Apparatus**, simple copying, 5-1302
- Appetite**, as guide for food, 13-3273
 see also Food, real value of
- Applan Way**, of Rome, 4-1030; 22-5926, 5930
- Apple**, Adam's: see Larynx
 and candle trick, 22-5923
 and Justinian's wife, 12-3189
 blossoms of, 15-3815; 16-4134; 22-5815-16
 browns when bitten, 22-5723
 Burbank's varieties of, 14-3561
 cutting without peeling, 21-5445
 drawing or painting an, 1-267
 ducking for, 22-5923
 golden apples, 7-1710; 14-3622; 20-5186
 in America, 3-649
 in "Magic Carpet," 7-1711
 in story of William Tell, 1-130
 in United States, 2-2386
 insects destructive to, 12-3206
 life history of, pictures, 2-557-58
- Apple**, of Hesperides, 12-3374
 paring, 22-5923
 puzzle about, 1-110
 ripening of, 17-4388
 rosy, 21-5479
 shot at by Tell, 7-1703
 water in, 5-1193
 Western, 22-5714
 where does it come from? 6-1159
 where grown, 3-649
 why it falls, 2-318, 322
 with monogram, 24-6281
- Apple-dumpling**, the first, 24-6339
- Apple-picker**, easily made, 23-6084
- Apple-woman**, figure of, 24-6282
- Appiqué-work**, table-cover in, 16-5030
- Appomattox Court House**, surrender at, 2-787, 789; 8-2054, 2056; 13-5493; 17-4466
- Apprentice**, for fur-traders, 18-4838
 the brave, 17-4449
- Apprentice-boy**, and his master's children, 12-3070
- Apricots**, where grown, 3-649
- April**, birthstone for, 24-6377
 name of, 17-4533
- Apron**, blacksmith's, standard of Persia, 20-5155
- Apteryx**, a bird, 1-51, 6-1504, 1508-09
- Aquamarine**, a gem, 24-6377, 6380
- Aqua regia**, what it is, 5-1317
- Aquarii**, Roman firemen, 22-5756
- Aquarium**, fresh-water, 7-1739
 in New York, 19-5009
 salt water, or marine, 17-4492
- Aqua-vita**, old name for alcoholic spirits, 22-5726
- Aqueduct**, for New York water, 20-5194
 of Carthage, 12-3127
- Aquinas, Thomas, St.**, Lippi's pictures concern-
 ing, 19-5106
- Aquitania**, ship, 1-83
- Arabia**, and astrology, 8-1960-61
 birds of, 6-1504
 deserts of, 12-3126
 gift of, 22-5788
 history of, 9-2351; 15-3855-57, 3862; 16-4304
 map of, 15-3855
- "Arabian Nights,"** see Harun-al-Raschid
- Arabis**, a plant, 20-5228
- Arabs**, a patriotic Arab, 15-4025
 and astronomy, 7-1676
 and horses, 23-6066
 and Mahomet, 6-1549
 and medicine, 18-4630
 and Rome, 20-5282
 and sugar, 3-703
 and their houses, 2-286
 conquests of, 15-3858
 costumes of, 15-3861
 discovered butter, 5-1132
 in desert, 23-6096-97
 knowledge of, 15-3860-61
 of Africa, 16-4297
 taught Venetians, 5-1168
 see also Saracens
- Aragon**, kingdom of, 13-3340
- Aral Sea**, in Asia, 15-3924, 3933
- Aram**, old name for Syria, 5-1287
- Arany**, Hungarian poet, 21-5656
- Ararat**, mountain, in Asia, 15-3855
- Araucanians**, South American natives, 17-4506, 4512-13, 20-5366
- Arawaks**, Indian tribe, 17-4506, 23-6041
- Arbela**, battle of, 5-1323, 1326; 20-5149, 5154
- Arbitration**, and war, 12-3232
 court and conference of, 24-6298
 of Venezuela dispute, 13-3494
- Arbor Day**, celebration of, 17-4462, 4469
- Arbutnot, John**, English writer, 9-2352
- "Arcades,"** a masque, by Milton, 22-5674
- Arcadia**, boar of, 20-5185
 kingdom of, 13-3374
- Arcas**, son of Jupiter, 12-3374
- Arc de Triomphe**, de l'Étoile, 19-5041; 21-5538
 du Carrousel, 19-5041; 21-5536
- Arc**, moved by magnets, 21-5529
 natural, 2-424
 of the foot, 10-2574
 palmar and plantar, 18-4201
 resists breaking, 18-4694
 round or Norman, 3-590
 strength of, 9-2350
 the flattest, 8-2159
 use in buildings, 3-610
 see also Arc de Triomphe, Severus, arch of, etc.

GENERAL INDEX

- Archachon**, oysters at, 15-3853-54
Archegosaurus, 1-50
Archopteryx, first of birds, 1-53; 3-801
Archangel, a flower, 17-4354
Archangel, Russian port, 4-859; 15-3805
Archangel-Michael, cathedral of, 15-3802
Archer, J. W., drawings of, 21-5630
Archer, a constellation, 10-2641, 2643
Archimago, character in "Faerie Queene," 3-698-99
Archimedes, Greek mathematician, 5-1320, 7-1678; 12-3150
Archipelago, Grecian, in Aegean Sea, 12-3185-86
Architect, of Cologne cathedral, 16-4240
Architecture, Arabian, 15-3860
 Byzantine, 12-3187; see also St. Sophia, mosque
 Gothic, 13-3270
 Norman style of, 3-590
Archie, in "Canterbury Tales," 2-497
Arc-lamp, description, 3-888
Arc-lights, use of, 24-8351
Arcolia, battle of, 17-4365
Arcot, battle of, 5-1114; 7-1718
Arcotio, animals of, 1-161; 2-287, 407-08; 21-5576
 birds of, 7-1902
Arcotio Cirolo, midnight sun in the, 14-3661
Arcotio Current, supplies food for cod, 24-6294
Arcotio Ocean, animals in, 4-1075
 carried Russian trade, 14-3724
 islands in, 8-1920
Arcoturus, a star, 10-2639-41
Ardashir, see Artaxerxes
Ardas, Camillus at, 14-3594
Ardan, Mary, Shakespeare's mother, 21-5579
Ardan, Forest of, 3-637
Ardennes, highlands of, 14-3339
Ardri, high king of Ireland, 21-5551-52
Ara, Broch's; see Speech, centre of
 of country, measuring, 20-5290
 silent, of the brain, 14-3690
"Aroopagrica", by Milton, 22-5676
Aroopagus, council for Athens, 22-5676
Ara, field of, 1-204
Arethusa, a nymph, 12-3063
Arethusa, an orchid, 12-3063
Argali, a kind of sheep, 2-408
Argall, Samuel, expedition of, 3-558
Argand, Aimé, invented lamp, 3-669
Argentine Republic, animals of, 3-682
 description, 18-4610
 Germans in, 11-2771
 history of, 17-4514; 20-5361
 soils of, 13-3351
 waterfalls in, 17-4511, 4513
 wheat in, 5-1132; 9-2386
 wool in, 10-2678
Argo, constellation, 11-2845-47
Argo, ship, 1-203
Argol, and cream-of-tartar, 13-3386
Argolis, Hercules in, 20-5185
 see also Mycene
Argon, gaseous element, 4-957; 5-1319; 6-1447
Argonauts, Cepheus and, 13-3374
Argos, king of, 4-1051
 sculpture in, 16-4172
Argus, Greek hero, 1-203
Argus, dog of Ulysses, 16-4280
Argyll, Duke of, and Helen Walker, 9-2236
 in "Heart of Midlothian," 7-1773
 of Scotland, 6-1456
Argyll, Marquis of, in "Legend of Montrose," 6-1497
Arica, Chilean town, 18-4608
Arica, province of, 20-5366
Arieda, a star, 10-2641, 2643
Ariel, a fairy, 2-329
Aristides, the Just, 20-5208
Aristippus, Greek, 5-1320
Aristocrats, of France, 16-4100, 4104
Aristotelians, philosophers, 5-1328
Aristotle, beliefs of, 7-1679; 14-3591
 Greek philosopher, 2-318; 5-1320, 1326-28
Arithmetic, in rhymes, 17-4385
 school-lessons, 1-262; 2-457; 3-742; 4-988;
 5-1236; 6-1467; 7-1726; 8-1947; 9-2230, 2270;
 10-2693; 11-2923; 12-3169; 13-3332, 3373, 3467
Arizona, admission, 13-3495
 birds of, 9-2340, 2342
 cañon of, 4-face 851
 copper in, 10-2678
 desert of, 12-3127, 3129; 14-3625-26; 23-6097,
 6099
 flower of, 22-5815
 gems of, 24-6379, 6383
Arizona, history of, 7-1844
 mountains of, 1-12
 moving pictures in, 20-5140
 new state, 23-5962
 purchase of, 13-3492
 water-works in, 21-5416
Arizona, ship, 23-6205
Arizona Canal, for irrigation, 21-5418
Ark, in "David Copperfield," 11-2863
Ark, rested on Mt. Ararat, 15-3855
Arkansas, admission of, 7-1840; 13-3491
 boll-weevil in, 12-3205
 description of, 23-5962
 during Civil War, 8-2050
 flower of, 22-5815
 secession of, 8-2044, 2046; 13-3492; 23-5957
 slavery and, 7-1838
Arkansas River, mouth reached by Marquette, 2-278
Arlandes, Marquis d', ascent in balloon, 22-5810
Arlington, national cemetery at, 7-1692; 23-5959
Armada, and Philip II, 13-3344
 and Sir Walter Raleigh, 21-5411
 and starlight, 8-1901
 destruction of, 4-862-63, 1043; 14-3546,
 22-5850; 24-6274
 in "Westward Ho!" 14-3713, 3719
Armadillo, an animal, 1-50; 4-1018, 14-3668
Armenia, butter in, 5-1132
 costume of, 13-3437
 history of, 15-3860, 3862
 plateau of, 15-3856
Arminius; see Hermann
Armox, of Angela, in "Faerie Queene," 3-700
 of armadillo, 4-1018
 of fish, 14-3666
 of plants, 20-5211
 of sea-monsters, 4-1074
 why not worn now, 1-167
Armour, Jean, married Burns, 23-6033
Arms, arteries of the, 19-4928
 bones of, 10-2468, 2571, 2-73, 16-4201
 broken, 15-3963; 16-4288-89
 during walk, 10-2471
 exercises for, 18-4829
 of cuttlefish, 10-2484
 value of, 3-675, 14-3600
Army, British, 6-1638, see also Birkenhead, ship
 German, 11-2762, 17-4532
 in the Colonies, 4-995
 of Bavaria, 11-2762
 of Prussia, 11-2762
 of Saxony, 11-2762
 of United States, 6-1390, 1435-36
 of Wurtemberg, 11-2762
Arnold, Benedict, assaulted Quebec, 3-756
 during Revolution, 4-1000, 1002, 1004
 treason of, 4-1008; 15-3920; 18-4735
Arnold, Sir Edwin, poems: see Poetry Index
Arnold, Matthew, English poet, 21-6530, 23-6018
 poems: see Poetry Index
Arnold, Samuel J., song writer, 14-3758
Arnold, Thomas, headmaster of Rugby, 16-4127,
 4142, 23-6038
Arnolfo di Cambio, Italian artist, 11-2788, 2794
Arno River, in Italy, 12-3074, 3080
 valley of, 11-2787
Arona, statue of Cardinal Borromeo, 5-1208
Arouet, Françoise Marie; see Voltaire
"Around the Campfire", by Roberts, 16-4327
Arpád, Magyar hero, 11-2898; 21-5652
Arragon, Prince of, Shakespearean character,
 3-563
Arran Islands, coracles and, 21-5551
Arras, cathedral of, 19-5106
Arrian, and Epictetus, 11-2939
Arrins, character in "Ben Hur," 20-5258
Arronax, Pierre, character in "Twenty Thou-
 sand Leagues," 19-5049
Arrondissement, of France, 9-2425
Arrow, Indian, 10-2576
 poisoned arrows, 6-1383, 1386; 20-5185
 rent for Maryland, 2-528
 signal by, 24-6286
 story of Leonidas and Persian, 5-1322
 why it flies, 17-4583
Arrowhead, a plant, 19-4946-48
Arrowheads, Indian, 1-17
 of cave-men, 1-206
Arrow-musslet, a marine animal, 9-2404
Arrowrock Dam, in Idaho, 11-2710
Arrowroot, as a food, 11-2950
 for fading ink, 5-1802
Arsenals, United States, capture of, 8-2044;
 13-3492

GENERAL INDEX

- Arsenic**, element, 5-1318; 18-4691; 23-6094
- Art**, among red Indians, 11-2782
- in Ireland, 21-5552
 - in Netherlands, 14-3541
 - in Russia, 18-3800
 - in Spain, 13-3344
 - new birth of, 12-3192
 - of Canada, 5-1281
 - of cave-men, 1-208
 - of Venetians, 5-1168
- Artabanus**, Parthian ruler, 20-5155
- Artaxerxes**, or **Ardashir**, king of Persia, 20-5152, 5155
- Artaxerxes II**, war with Cyrus, 19-5114
- Artaxerxes III**, king of Persia and Egypt, 20-5154
- Artegall**, Sir, character in "Faerie Queene," 3-700
- Artemia**, changed Rhodanthe, 12-3210
- Artemisia**, widow of Mausolus, 20-5207
- Arteries**, bleeding of, 18-4616-17, 4630, 19-4880
- blood-vessels, 6-1593; 7-1650, 16-4200-01, 21-5623, 23-6109
 - Carrel and, 24-6369
 - injured, 19-4928
 - pulse of, 15-4018; 17-4376
- Arthur**, character in "King John," 21-5587
- Arthur**, king of England and Knight of the Table Round, 4-880-86, 5-1199
- in enchanted cave, 8-1995
 - passing of, 13-3371
 - stories about, 18-3936, 3941
 - subject of Tennyson's "Idylls," 23-6037
- Arthur**, Prince, character in "Faerie Queene," 3-697-702
- Arthur**, son of Henry VII, 4-856
- Arthur**, Chester A., administration of, 13-3488, 3493
- as President, 9-2378, 2382
- Arthur**, George, character in "Tom Brown's Schooldays," 16-4141
- Arthur's Court**, stories of, 8-1988
- Arthur's Round Table**, 13-3282
- Arthur's Seat**, in Scotland, 9-2322
- Artigas**, José, Brazilian leader, 20-5370
- Artillery Museum**, 18-3800
- Artists**, mind of, 19-4999
- see also Painters, Sculptors, etc.
- "**Artless Tales**," by Burney, 10-2620
- Arts**, Bridge of the, in Paris, 21-5535
- Aruba**, island of, 23-6048
- Arum**, a plant, 10-2582, 15-3892, 18-4633
- Arundel**, Earl of, portrait by Van Dyck, 17-4591
- Aryan**, a language, 7-1713
- Aryans**, a family of nations, 7-1713, 20-5145
- Asbestos**, called "Salamander's wool," 5-1215
- cloth of, 24-6228
 - in Canada, 23-6094-95, 24-6296
 - why it does not burn, 4-918
- Ascalon**, a sword, 4-978
- Ascension**, church of the, 16-4221
- Aschere**, and Beowulf, 13-3502
- Asclepias**: see **Aesculapius**
- Asgard**, realm of the gods, 14-3622, 3652
- Ash**, a tree, 13-3261, 14-3733; 20-5339-40
- Ashby-de-la-Zouch**, in "Ivanhoe," 7-1663
- Ashes**, for fertilizer, 10-2499
- made of what? 10-2638
 - volcanic, 23-6222
 - yield potash, 16-4144
- Ashville**, health resort in North Carolina, 23-5958
- Ashley**, Anthony, Lord, 2-531
- Ashokan Bridge**, and Ashokan reservoir, 20-5195
- Ashokan Reservoir**, for New York's water-supply, 20-5193, 5195
- Ashton**, Lucy, in "Bride of Lammermoor," 6-1497
- Ashtoreth**, a god, 24-6332
- Ashur**, the god, 19-4982, 4966
- Ashur-bani-pal**, king of Assyria, 19-4957, 1966-68
- Ashur-nasir-pal**, king of Assyria, 19-4961, 4964, 4967
- Asia**, animals in, 1-152; 2-294, 295, 407, 410; 3-682, 4-1012, 1017-18; 23-6063
- birds of, 6-1559; 7-1893
 - cotton in, 9-2384
 - deserts of, 12-3126, 3128
 - exploration of, 4-867; 9-2352
 - France in, 9-2426
 - fruit in, 15-3924
 - furs from, 19-5078
 - heart of, 18-3928; 18-4118
 - history of, 9-2351; 12-3035
- Asia**, insects of, 12-3200
- map of, 13-3926
 - salt in, 1-238
 - snakes of, 6-1283-84, 1386
 - statue of, by Foley, 19-5040
 - see also Northwest Passage
- Asia Minor**, art in, 16-4172
- history of, 5-1326; 20-5148
 - peninsula of, 15-3855-56, 3862
- Askelon**, and the Crusades, 6-1553
- Askew**, Anne, martyrdom of, 19-5094; 23-5935
- Asoka**, ruler of Hindustan, 7-1714
- "**Asolando**, Fancies and Facts," by Browning, 23-6038
- Asp**, Egyptian, 6-1382
- Aspens**, trembling leaves of, 18-4694
- Asphalt**, on Trinidad, 23-6047
- Asphyxia**, death by, 21-5623
- Ass**, and Jupiter, 13-3270
- and the horse, 11-2893
 - dog and the, 11-2893
 - in the lion's skin, 15-3879
 - two loaded asses, 9-2179
- Assam**, tea in, 23-5972, 5971
- Assaye**, battle of, 17-4366
- Assembly**, Constituent, of the Third Estate, 16-4101
- Assembly**, Legislative, of Canada: see Canada, Legislative Assembly
- Assembly**, National, of Bohemia: see Bohemia, history of
- Assembly**, National, of France, 8-2071; 9-2280, 2291, 2425; 16-4100, 4102; 17-4364
- see also States-General
- Assembly of the Three Estates**, in France, 16-4100
- Assembly of Wise Men**, 3-596
- Assembly**, Revolutionary, 16-4106
- Assiniboia**, district of, 5-1280
- Assiniboine River**, in Canada, 1-230
- Assiout**, dam at, 21-5420-26
- town on the Nile, 23-6100
- Assisi**, Little Poor Man of: see Francis, St.
- Association**, process of, 19-4995
- Association**-fibres, of the brain, 14-3690
- Associations**, Parents', 12-3220
- Assuan**, dam across Nile, 16-4304, 4306; 18-4841-44, 4846, 4853; 21-5415, 5417-27; 23-6183-84, 6189
- Assumption**, cathedral of the, 15-3802
- Assyria**, and the Jews, 24-6330, 6332
- history of, 16-4852; 19-4957; 23-6066
- Assyrian language**, 16-4967
- Assyrians**, and early writing, 15-3909
- and stars, 10-2637
 - dogs of, 24-6319
 - music of, 5-1087
 - pottery of the, 17-4539
 - sculpture of, 16-4171-72
 - writing of, 13-3480
- Asters**, plants, 16-4186; 20-5216, 5219
- Astolat**, Lily Maid of: see Elaine
- Astrachan**, a fur, 19-5078
- Astrak**, galley in, "Ben Hur," 20-5268
- Astrakhan**, port of Russia, 14-3723, 15-3802
- Astrologers**, of old, 8-1960
- Astrology**, unreal science, 8-1960
- Astronomers**, prominent, 7-1675
- Astronomers**, royal, of England, 7-1682
- Astronomy**, study of, 7-1675; 8-1959
- Astyages**, king of Media, 20-5145
- Asulkan Glacier**, in British Columbia, 22-5779
- Asuncion**, founded, 17-4512
- in Paraguay, 17-4513
- "**Asylum of the Universe**," see Chosroes II
- "**As You Like It**," by Shakespeare, 3-637; 21-5588-89
- Atacama Desert**, nitrates of, 18-4606
- Atahualpa**, Inca chieftain, 9-2223, 2225; 17-4510
- "**Atalanta in Calydon**," by Swinburne, 23-6040
- Athara River**, in Africa, 16-4306
- Atchafalaya**, Topeka and Santa Fé Railway, engine of, 2-314
- Athabasca**, a district, 5-1280
- fur traders in, 18-4838
- Athabasca River**, in Canada, 19-5073; 22-5778; 23-6145
- Athanasius**, bishop of Alexandria, 18-4029-30
- Atheling**: see Edgar, the Atheling
- Athens**, statues of, 20-5206
- Athens Parthenon**, statue and temple of, 20-5205
- Athenaeum Portrait**, of Washington, 16-4216
- Athene**, Greek goddess, 1-203; 4-1051; 13-3240
- Athenodorus**, Greek sculptor, 16-4178

GENERAL INDEX

- Athens**, Greek city, 12-3186, 3238; 20-5199, 5202, 5204, 5208
 history of, 5-1321, 1324, 7-1819; 20-5148, 5150, 5152
 monuments in, 19-5040, 5043
 national flower of 23-5816
 navy of, 5-1322
 school for girls in, 12-3120
 women killed man, 19-5001
- Atherton, Gertrude**, American writer, 8-2103
- Athlete of Python**, by Leighton, 16-4174
- Atin**, character in "Faerie Queene," 3-699
- Atkinson, Doctor**, on Scott Expedition, 21-5466
- Atlanta**, capital of Georgia, 8-2053; 23-5958, 5964
- Atlantic Cable**, 10-2491, 2493-96; 18-4697
- Atlantic Ocean**, animals in, 4-1075
 bottom of, 18-4703
 fish of the, 10-2703-04
- Atlas**, a Titan, and the Golden Apples, 20-5186
 and the vault of Heaven, 17-4481
 daughters of, 13-3374
 supported the world, 17-4533-34
- Atlas**, game to play with, 13-2321
- Atlas Mountains**, in Africa, 16-4299
- Atmosphere**, and radiation, 16-4311
 disappearance of, 14-3680
 see also Earth, Moon, etc., Pressure, atmospheric
- Atoms**, breaking up of, 5-1319
 in hemoglobin, 8-1430
 life of, 18-4698
 light of, 23-5892
 luminous, 20-5166
 motion of, 16-4230, 17-4374, 4584; 19-4880
 of elements, 5-1313, 6-1418, 1447
 units of matter, 4-956, 1020, 1033; 5-1243
 what they are, 20-5356
 world inside an atom, 6-1567
 see also Compounds, making of
- Atossa**, character in "Egyptian Princess," 23-5952
- Atrium**, of Pompeii, house, 23-6227
- Attar-of-roses**, from Bulgaria, 13-3242
- "At the Back of the North Wind"**, authorship of, 6-1483
- "At the Mercy of Tiberius,"** by Evans, 8-2098
- Attica**, division of Greece, 12-3186
 Greek country, 20-5202
 sculpture in, 16-4172
- Attila**, Hunnish chief, 9-2347; 10-2550; 15-3926
- Attorney-General**, of the United States, 6-1393, 1438
- Attraction**, of earth, etc.: see Gravitation
- Auber, Harriet**, hymns of, 8-2016
- Aubrietia**, flowers, 5-1098
- Auckland**, city of New Zealand, 6-1488, 1490, 1492
- Auckland**, province of New Zealand, 6-1488
- Auditive**, associate by sounds, 19-5000
- Audubon Avenue**, in Mammoth Cave, 5-1308
- Audubon Societies**, National Association of, protect bird-life, 9-2338, 2341
- August**, king of Elis, 20-5185
- Augustus**, battle of, 21-5556
- Augsburg**, German town, 11-2769
- August**, birthstone for, 24-6377-78
 name of, 17-4536
- Augusta**, queen of Germany, 10-2598
- Augusta**, city in Georgia, 23-5957, 5958
- Augustina**, the Maid of Saragossa, 8-1953
- Augustine**, St., Roman missionary, 2-466-67, 18-4790, 4792
- Augustus**, emperor of Rome, and Cleopatra's Needle, 19-5039
 reign of, 2-434, 442, 535; 10-2550; 17-4535; 20-5280, 5308-09; 23-6221
 statues of, 22-5926, 5933
- Auphameyos**, learned men, 17-4510
- Auk**, egg of, 7-face 1756
 great, 1-54; 6-1502, 1508; 7-1644
 little, 7-1645-46
- "Auld Robin Gray,"** story of, 14-3767, 3770
- Aulnoy (Comtesse M. G. de B. d')**, French author, 6-1477
- Aunt**, puzzle, about Tom's, 1-110
- Aunt Sally**, a game, 8-1096
- Aurelius, Marcus**, 2-541-42
- Auricle**, of the heart, 6-1596
- Auricula**, a plant, 8-2039; 20-5229
- "Aurora,"** painting by Guido Reni, 17-4593
- Aurora borealis**, or Northern Lights, 14-3661; 18-3882; 20-5293
- "Aurora Leigh,"** by Browning, 23-6038
- Aurora Polaris**, 18-3882
- Aurangsebe**, Mogul emperor, 7-1716
- Augleich**, an agreement, 21-5654
- Austen, Jane**, English author, 10-2621
- Austerlitz**, battle of, 9-2288; 10-2593; 14-3728; 17-4366
- Austin, Alfred**, poems: see Poetry Index
- Austin**, capital of Texas, 17-4572, 23-5962
- Australasia**, birds of, 21-5677; 23-5752
 British possessions of, 6-1492
- Australia**, animals in, 1-56; 2-414, 508; 3-802, 804; 4-873-78; 6-1376; 21-5677; 23-6000
 ants of, 11-2972
 barrier-reef of, 8-2408
 baseball in, 20-5247
 birds of, 6-1366, 1376, 1507-08, 1563-64, 1565-66, 17-1759, 1763
 British mint in, 14-3646
 caves of, 21-5472
 character of, 12-3032, 3035
 city-ownership in, 11-2909
 cotton in, 6-1372
 deserts of, 23-6097, 6101
 dogs of, 24-6320
 explorers of, 6-1486
 fishes of, 10-2479-80
 fruit in, 6-1370-72, 1374, 1376
 furs from, 19-5072
 gems from, 24-6380-83
 gold in, 20-6318-23
 great South Land, 6-1367
 history of, 2-364; 5-1113, 1115, 1130; 16-4080
 insects of, 12-3197, 3200; 13-3302
 men who found, 2-363
 natives, 6-1366, 1367
 parliament of, 6-1374
 plants of, 6-1376; 15-3889, 3895
 reptiles in, 5-1212-13, 1218
 serpents of, 6-1384
 sheep in, 2-408
 shipwreck off, 16-4090
 skull of native, 10-2569
 snow in, 10-2532
 story of Chinaman, 7-174
 tea in, 23-5980
 unexplored tracts in, 9-2352
 wheat in: see Wheat, in Australia
 winter in, 12-3044
 woman-suffrage in, 12-3120
 wool in, 10-2678
- Australian Alps**, mountains, 6-1370
- Australians**, and the boomerang, 13-3514
- Austria**, Duke of, and Tell, 7-1703
 incident about, 11-2896
 see also Maximilian, Holy Roman Emperor
- Austria, Emperor of**: see Joseph II, of Austria
- Austria**, alcohol and children in, 21-5440
 and Berlin treaty, 13-3242
 and Bosnia and Herzegovina, 13-3244
 and French Revolution, 16-4106
 and German federation, 10-2559, 2600
 and Great War, 13-3247
 and Netherlands, 14-3544
 and Poland, 14-2894
 and Prussia, 10-2592, 2956-97
 and Serbia, 13-3242, 3247
 and Switzerland, 7-1703
 and Turks, 10-2559; 21-5652, 5656; see also Turks
 arms of, 7-1658
 crown jewels of, 24-6382
 duchies of, 10-2556
 during Seven Years' War, 17-4555
 flag of, 7-1658
 hair killed, 13-3242, 3247
 history, 1-130, 134; 2-334; 4-1069; 11-2894; 21-5652
 in Italy, 12-3078, 3080, 3082-86; 18-4992
 losses of, 10-2593
 meaning of, 10-2555
 ministers of, 11-2895, 2906
 peoples of, 11-2895
 provinces of, 11-2895, 2906
 radium in, 3-646
 Reichsrat of, 11-2906
 serfdom in, 10-2561
 states of, 10-2594
 war with France, 9-2289-90; 10-2561; 16-4102; 17-4360, 4364-65
 war with Prussia, 9-2290; 11-2905
 wars of, 13-3344
 "Austria," hymn tune, 13-3288, 3291
- Austria-Hungary**, a dual monarchy, 11-2895
 see also Austria
- Austrians**, in Canada, 22-5946
- Austrian Succession**, War of the, history, 17-4554

GENERAL INDEX

- Austro-Hungarians**, in Canada, 14-3733
Authors, flowers of British, 13-4653
"Autobiography of a Grizzly", by Seton, 23-6135
"Autocrat at the Breakfast Table", by Holmes, 6-1617
Automobiles, manufacture of, in U. S., 10-2686
Autumn, leaves change color, 5-1164
 stars of, 10-2643
Auvergne, French province, 9-2416
 lace-making in, 21-5525
Avalanches, in Alps, 10-2530; 12-2989; 15-3905; 24-6263
 in New Zealand, 6-1490
 of snow and ice, 13-3250
Avars, European people, 11-2898
Avebury, Lord, and insects, 11-2966, 2971; 18-4262
 English naturalist, 3-816; 19-5023
Avenger, ship, in "Twenty Thousand Leagues", 19-5053
Avena, the hedge, 15-3895
 meaning of, 19-4951
Averages, law of, 21-5514
Avery Island, birds protected on, 9-2343
Aviation Squad, of police department, 21-5491
Aviators, training of, 1-177
Avignon, city in France, 9-2422
 popes at, 12-3082; 20-5310
Avocat, et les poires, 18-4798
Avocet, a bird, 8-1978-79
Awl, of St. Crispin, 4-1029
Awls, of seeds, 16-4206
Awns, of grass, 5-1340
Axe, how to use, 2-383
 of Indian, 10-2576
Axis, of skeleton, 10-2464
Axle, workshops for, 17-4457
Aye-aye, an animal, 3-631-32
Aymer, Prior, in "Ivanhoe", 7-1663
Azaleas, shrubs, 3-623, 14-3786; 17-4557, 4559
Azazel, a cherub tall, 22-5678
Azores Islands, and division of New World, 2-283; 13-3342
Azote: see Nitrogen
Asotobacter, a microbe, 13-3352
Asov, capture of, 13-3194
Asov, Sen of, in Russia, 14-3721, 3728
Astec, Mexican Indians, 1-19, 2-274
 natives of Mexico, 17-4395
Azures, butterflies, 12-3020
- B**
- B**, pronunciation of, 9-2243
B. C., meaning of letters, 1-206
Baal, a god, 24-6332
Babar, founder of Mogul Empire, 7-1714
Babbage, Charles, mathematician, 22-5722
Babcock, Alpheus, piano of, 5-1088
Babel, tower of, 15-3855; 15-4969
Babes in the Wood, story of, 6-1523
Babington, plot of, 12-3142
Babley, Richard, character in "David Copperfield", 11-2866
Baboons, apes, 3-627, 631; 21-5505; 24-6244, 6246
 and young, 21-5664
Babs, in story, 19-5109
Baby, backbone in, 10-2467
 brought up by wolves, 21-5662
 cannot talk, 11-2907
 centre of gravity, 15-3884
 development of, 21-5638
 food for, 11-2828
 killing of babies, 20-5190
 memory of, 10-2473
 of della Robbia, 10-4173
 sight of, 14-3570
 skull of, 10-2570-71
 sleep of, 13-3385
 stretches when born, 3-814
Babylon, and the Jews, 24-6332
 history of, 6-1253, 1223; 19-4960-61, 4969; 20-5146, 5153-64
Babylonia, and Assyria, history of, 19-4957
 gold in, 20-5318
 language of, 20-5148
Babylonians, and bloodstone, 24-6379
 and the donkey, 23-6066
 writing and the, 13-3479, 3482, 3486; 15-3909
Byzantines, a variety of pig, 2-418, 414
Baccaria, Italian, 3-2166
Bacchantes, a statue, 14-4174; 18-4674
Baccharis, a shrub, 20-5219
Bacchus, a god, 22-5662
 monument to, 15-5040
Bach, John Sebastian, musician, 5-1062; 15-2325, 3289
Bachelor's Buttons: see Cornflower
Bacilli: see Microbes
Back, sleeping on, 15-3903
Backbone, and centre of gravity, 15-3884
 and height, 10-2471
 and the nervous system, 14-3597
 of serpent, 6-1379
 of vertebrate animals, 3-670-75; 10-2464-68; 16-4200
Back-draft, in fires, 22-5759
Backfield: see Football
Back-to-Back, dance movement: see Dances
"Backwoodsman", by Roberts, 16-4827
Bacon, Sir Francis, English writer, 3-1960; 18-4723; 21-5488
Bacon, Josephine D., American writer, 3-2103
Bacon, Nathaniel, rebellion of, 2-530
Bacon, Roger, scholar-monk, 3-596; 8-1164; 15-4034; 22-5810
Bacon, problem concerning price of, 6-1606
Bacteria, development of, 14-3665
Baden, part of Germany, 11-2768
Baden-Powell, Sir Robert S., and Boy Scouts, 23-6136
Badger, life-history, 1-157, 161; 21-5574
 winter sleep of, 24-6373
Badroulboudour, princess, 1-89
Badei: see Bode, the Venerable
Baflin (William), English navigator, 21-5458
Baflin's Bay, in Arctic Canada, 8-1914
Bag, for brush and comb, 1-248
 for shoes, 10-2587
 needlework, 21-5643
 noise of bursting, 2-349
Bagasse, sugar-refuse, 3-704
Bagdad, Caliph of: see Haroun Alraschid
 of Sindbad, 3-791
 on the Tigris, 15-3858-60
Baggage, problem concerning, 6-1522
Bagheera, black panther, 21-5468
"Baglers", Norwegian party, 14-3654
Bagot, Sir Charles, governor of Canada, 5-1272
Bagpipes, at the relief of Lucknow, 6-1119
 cause of sound, 12-3149
Bahama Islands, description, 23-6041, 6046
 sponges and, 18-4267
Bahia, port of, 18-4606; 20-5368
Baikal, Lake, animals in, 4-1076
 in Asia, 15-3804, 3926
Bailey, Edward Hodges, English sculptor, 6-1262
Bailey, Philip James, poems: see Poetry Index
 wrote "Pestus", 4-1057
"Baillie's Daughter at Islington", picture by Hatherell, 21-5499
Baillie, George, and Grisel Hume, 21-5626-28
Baillie, Joanna, poems: see Poetry Index
Baillie, Robert, Scottish covenant, 21-5625
Baily, and early coaches, 23-6052
Baily, and Nelson column, 19-5040
Bainbridge, William, American naval officer, 12-3005-07
Baird, Thomas, made colonial shoes, 12-3102
Baker, Sir Benjamin, bridge-builder, 1-24
Baker, Sir Samuel, African explorer, 2-302; 17-4577
Baker Island, American, 8-2147
Bakery, modern, 5-1140
Baking, ways of, 5-1132
Baking-powder, source of, 13-3386
Baking-soda: see Sodium bi-carbonate
Baku, oil-wells of, 15-3804
 seized by Peter, 14-3726
Balaclava, charge of, 14-3729
Balance, causes of, 14-3675
 centre of, 15-3999
 feats of, 22-5737
 helped by eyes, 7-1654
 loss of, 7-1686
 of nature, 22-5891
 power of, 14-3599
 sense of, 1-179; 15-3998
 swinging arms and, 10-2471
 tricks of, 1-106
 see also Equilibrium
Balance (machine), invented by Galileo, 7-1678
Balaton, Lake, of Europe, 21-5651, 5660
Balboa, Vasco Nunez de, discovered Pacific, 2-272, 275
Balboa, Panama Canal terminal, 1-84

GENERAL INDEX

- Balcarras, Earl of**, 14-3770
"Balcony Stories," by King, 8-2102
"Bald as a Deer," by Arnold, 23-6039
Baldness, cause of, 8-2082
Baldour, the Beautiful, in story, 10-5284
Baldwin, of Flanders, as emperor of Constantinople, 12-3190
Baldwin (I), king of Jerusalem, 6-1551, 1552
Baldwin II, king of Jerusalem, 6-1553
Baldwin III, king of Jerusalem, 6-1553
Baldwin, Matthias, and locomotive, 3-405
Baleares Islands, 13-3338
Baleen: see Whalebone
Baleen-whale: see Whale
Baile, Michael W., composer, 13-3294; 14-3771
Balfour, John, character in "Old Mortality," 7-1776
Balk: see Baseball
Balkan Mountains, 12-3185
Balkan Peninsula, costumes, 13-3245
 map, 12-3184
 of Europe, 12-3073, 3185; 13-3239, 3247
Balkans, sandals in, 12-3106
 Turkey and, 13-3239
Ball, Dr., and baboon, 3-632
Ball, Sir Robert, English astronomer, 8-1968
 comments of, 9-2206, 2210, 11-2847
Ball, Thomas, American sculptor, 18-4668
Ball, bouncing of, 5-1164; 19-5019
 energy of, 22-5893
 falling, 13-3430; 14-3591
 for cricket, hockey, etc.: see Cricket, Hockey, etc.
 forward motion of, 8-2008
 Haytian rubber, 14-3569; 22-5793
 in the hollow post, 21-5478
 measuring diameter of, 23-6009
 of many colors, 5-1247
 pop-corn, 1-255
 princess's golden, 5-1353
 sound of hitting, 3-813
 that answers questions, 3-734
Ballads, stories told in, 15-3936, 3910
 what they are, 2-478; 5-1153
 see also Songs, writers of famous
"Ballads and Other Poems," by Longfellow, 6-1614
"Ballad to Shoemakers," by Whittier, 12-3102
Ball-and-socket, form of joint, 10-2573-74
Ballarát, in Australia, 20-5322
Ballast-plants, are fugitives, 17-4352
Ball-bearings, lessen friction, 18-4695
Balmany, explorer, 21-5464
Ball-games, eyes and, 17-4527
 for the garden, 6-1803
 for the open air, 23-6081
 of Indians, 11-2782
Balliol, John, king of Scotland, 1-128
Balloon, air in, 17-4393
 air pressure and, 15-3980
 and gravity, 6-1691
 and spinning earth, 12-3226
 Arctic expedition of, 21-5460
 ascent of, 1-171, 2-419-23, 15-3828
 ballooning on horseback, 16-4292
 bird dropped from, 12-3229
 clouds and fog from, 14-3681
 cold in, 3-812
 early experiments, 22-5810
 equilibrium of, 15-3886
 filled with hydrogen, 5-1243
 keeping up of, 4-914
 making a hot-air, 14-3557
 sound waves and, 17-4582
 steerable, 1-172
 use of, 1-173
Balmaceda, Señor José, president of Chile, 20-5366
Baloo, brown bear, 21-5468
Balsam, yellow: see Touch-me-not
Balsam Lake, in Canada, 1-228
Balsam, reed-boats, 18-4810
Balsora, king of: see Zeneb
Balthazar, character in "Ben Hur," 20-5259
Baltic, battle of the, 17-4364
Baltic Sea, and the Russians, 14-3721, 3728-29
 concerning the, 10-2559; 14-3652, 3661
 saltiness of, 10-2604
 trade of the, 10-2555
Baltic-seal, imitation seal furs, 19-5072
Baltimore, (1st) Lord: see Calvert, George
Baltimore, 2nd Lord, and Maryland, 2-528
Baltimore, 4th Lord, and Maryland, 2-529
Baltimore, and gas-lights, 3-667
Baltimore, bombardment of, 6-1399
 early history, 6-1392
 troops attacked in, 2-2046
Baltimore and Ohio R. R., engine on, 3-603
Baltimore-oriole, a bird, 13-3455
Baluchistan, state of, 15-3855
Bamboo, a giant grass, 5-1340
 for fire-making, 3-810
 for stakes, 3-732
 in electric lights, 3-668
 silkworm-eggs and, 7-1829
Ban, king of Gaul, character in "Table Round," 4-883
Ban: see Croatia-Slavonia, province of
Banana, food plant, 3-650, 653; 8-2151
 in Brazil, 20-5369
 in Costa Rica, 17-4407
 in West Indies, 23-6046
 skin for boat, 15-3900
Bancroft, George, as Secretary of the Navy, 18-4737, 4741
Bancroft Hall, at Annapolis, 18-4741-43
Band, landing of a brave, 10-2523
Bandages, for first aid, 15-3963; 16-4288
 see also First Aid to the Injured
Bandicoot, an animal, 4-878, 879
Bandits, Mexican, 13-3195
Banberries, plants, 11-2883
Banff, town in Canada, 1-232, 234; 15-3904; 22-5943
Bangkok, capital of Siam, 12-3022
Bank, of the United States, 13-3489-90
Banks, George, poems: see Poetry Index
Banks, Sir Joseph, comment on steam engine, 10-2490
Banks, General (Nathaniel P.), 8-2048
Banks of Newfoundland, fishing on, 3-553, 555, 10-2602; 24-6293
 see also Cod-fishing, Newfoundland, etc.
Bank-swallow, a bird, 13-3461
Banner, of Latham House, 18-4744, 4746
 worked by Isabella, 13-3341
Bannockburn, battle of, 12-3138
Bantams, variety of chickens, 6-1557
Baptism of Pocahontas, painting, 7-1686
Baptista, Shakespearian character, 3-644
Baptistry, of Florence, 11-2786, 2791, 16-4173
Baptists, branches of, 8-2043
 in Canada, 14-3733
Bar, cohesion, 3-608
 heat and, 4-1085
 grasping in, 20-5176
Barbados-earth, composition of, 9-2410
Barbados, island of, 23-6047-48
"Barbara Frietchie," by Whittier, 6-1616
Barbarossa: see Frederick I. Barbarossa
Barbary States, in Africa, 2-410, 16-4396
 pirates of the, 12-3006; 16-1090
Barbault, Mrs. Anna Letitia, poems: see Poetry Index
Barbel, a fish, 10-2705-06
Barbel, of a fish, 10-2709
"Barber of Seville," by Rossini, 13-3291
Barberry, a fruit, 17-4559-60
Barbers, as surgeons, 18-4631
Barbican: see Tower of London
Barcelona, Spanish city, 13-3337-39, 3717
"Barchester Towers," by Trollope, 9-1328
Barclay, Captain (Robert H.), during battle of Lake Erie, 3-759; 12-3009
Bardell, Mrs., character in "Pickwick Papers," 10-2459
Bards, ancient singers, 2-477
 of Ireland, 21-5551
Bareacres, in "Pendennis," 13-3515
Barents (Willem), Dutch navigator, 21-5158
Barents' Land, discovered, 21-5458
Barges, canal, 9-2418; 18-4768, 4770
 ice, 14-3760
Baring-Gould (Rev. Sabine), hymns of, 7-2018
 poems: see Poetry Index
Bark, edible, 20-5338, 5345
 gnawed by animals, 3-808
 insects that imitate, 13-3451
 of trees, 4-919; 21-5429
Barkantine, a ship, 15-3961-62
Barks, character in "David Copperfield," 11-2864
Barliss, Kate, of the Broken Arm, 1-257
Barley, a cereal, 5-1132; 7-1890; 8-2085, 14-3660
 as food, 11-2947, 2949
 production of, in United States, 9-2386
Barley-sugar, making, 14-3552
Barlowe, Arthur, and Raleigh, 24-6271
Barn, model dairy, 5-1142
"Barnaby Rudge," by Dickens, 10-2459; 11-2777

GENERAL INDEX

- Barnacle-geese**, story of, 8-1563, 1566
Barnard, George G., American sculptor, 18-4174; 18-4672-74
Barnard College, at Columbia, 17-4570
Barnegat, lighthouse, 3-568
Barney, Commodore, and Jerome Bonaparte, 19-4942
Barz-owl, a bird, 7-1901; 9-2342
Barz-swallow, a bird, 9-2216; 13-3461; 22-5751
Barometer, aneroid, 15-3977, 3982
 boy can make, 8-2135
 floral, 15-3968
 foretells weather, 3-812; 10-2536; 12-2993; 15-3979-83
 made at home, 21-5443
 mercury used in, 5-1318
 siphon, 15-3979-82
 weather-instrument, 12-2993
Barons, English, 12-3134, 3138; 18-4797; 21-5554
 see also England, history of
Baroque, in art, 18-4173
Barr, Amelia E., American writer, 8-2095, 2100
Barr, Matthias, poems: see Poetry Index
"Barrack-Room Ballads", by Kipling, 23-6010
Barre (Paul J. F. M.), and Napoleon, 17-1360
Barrel-pens: see Pens
Barrels, for hammocks, 23-6164
 growing things in, 14-3644
Barren-lands, of Canada, 8-1918; 14-3733
Barrett, Elizabeth: see Browning, Elizabeth B.
Barris, J. M., English author, 6-1483
Barrier Reef, of coral, 9-2408
Barriers, of coral, 9-2406
Barrow, prehistoric, grave-mound, 1-208
Barry, Sir Charles, English architect, 5-1260
Barry, a dog, 24-6322
Barry Dane: see Logan, John F.
Bartholdi, Frederic A., statue of, 19-5009
Bartholdy, Felix Mendelssohn: see Mendelssohn, musician
Bartholomew, St., apostle, in Asia, 9-2351
 martyrdom of, painted by Durer, 5-1177
Bartja, Prince, character in "Egyptian Princess," 23-5951
Bartlett, Paul Wayland, American sculptor, 18-4667, 4672
Bartlett, Capt. Robert, Arctic explorer, 21-5462
Bartolommeo, Fra, Italian artist, 11-2747, 15-4038
Barton, Clara, and the Red Cross, 12-3123
Bartsia, a plant, 20-5214
Basalt, kind of rock, 2-428; 20-5350
Base, in baseball, 20-5247
Baseball, a game, 8-2155; 12-3222-23; 20-5247
 bat and ball, 3-813
 throwing the, 6-1603
Basel, Swiss town, 12-2992
Baseball: see Baseball
Base Pleasure: see Acantha
Bases: see Alkalies
Basel II, emperor of Rome, 12-3190
Basilica, at Pompeii, 23-6225
 of Trèves, 17-2768
Basilisk, a lizard, 5-1211
Basilik, imaginary monster, 1-216
Basket, as an elevator, 23-6198
 Egyptian, 18-4848
 for ferns, 21-5643
 from hazel-twigs, 8-1997
 Indian, 20-5328
 made by Indians, 1-16
 of raffia-work, 21-5449
 willow, 1-96
Basketball, taught to children, 12-3222-23
Bas (George), explored Australia, 2-366
Bas, a fish, 10-2701, 2709
Base, sound of notes, 18-5058
Basanio, Shakespearean character, 2-330
Basano, dam of, 1-232
Base clef: see Music
Base Rock, birds of, 7-1646
Base Straits, near Australia, 8-1368
Basewood, a tree, 9-2429; 13-3261; see also Linden
 flowers of, 11-2877
Basille, capture of the, 16-4101, 4103
 in "Tale of Two Cities," 10-2461
 Parisian prison, 8-2076, 9-2282; 21-5538
Basutos, chief of, 7-1780
Bat, baseball, 3-813; 16-4294; 20-5248
 mysterious Chinese, 24-6280
Batavia, Dutch town in Java, 14-3546
Batavians, in the Netherlands, 14-3541
Bates, Charley, character in "Oliver Twist," 10-2565
Bates, David, poems: see Poetry Index
Bates, Edward, Attorney-General, 8-2040
Bath, city of, in England, 23-6053
Bathing, in the Ganges, 6-1635
Bathing-suit, a girl can make, 15-3967
Baths, New York's free, 12-3224
 Roman, 20-5270; 21-5540
Bathurst, Mr., English ambassador, 5-1150
Bathurst-Burr, seed of, 15-3895
Bath, Wife of, in "Canterbury Tales," 15-3930
Baton Rouge, capital of Louisiana, 23-5960
Batoum, port of, 15-3904
Bats, and flying, 14-3568
 flying animals, 1-56, 168; 3-801, 805; 14-3668
 hibernation of, 24-6173-75
 of Mammoth Cave, 5-1305, 1308
Battery, electric, 5-1099; 8-2167; 14-3575; 24-6351
Battery, in baseball, 20-5248
Battery, saved by Captain Peel, 15-3823
Battery Park, in New York, 2-276, 279; 10-5009, 5014
 see also Charleston, S. C.
"Battle Above the Clouds": see Lookout Mountain, battle of
"Battle Cry of Freedom", by Root, 12-3053
Battledore, and shuttlecock, a game, 14-3556
 mending a torn, 16-4294
Battlefields, of France, 9-2416
"Battle-ground", by Glasgow, 8-2101
"Battle Hymn of the Republic", by Howe, 8-2101; 12-3053
Battle Monument, Concord Hymn, 12-8050
"Battle of Agincourt", by Drayton, 21-5488
"Battle of Ivry", by Macaulay, 21-5535
"Battle of the Baltic", by Campbell, 14-3766
"Battle of the Booke", by Swift, 7-1748
"Battle of the Kegs", by Hopkinson, 12-3052
Battle-planes, high flight, 22-5871
Battleships, naval, 23-6204
Battue, of pheasants, 8-1659
Bavaria, Elector of: see Charles VII, of Austria, etc.
Bavaria, and Turk, 12-3192
 colors on flag, 7-1658
 Kingdom of, 1-132; 10-2594; 11-2769
Baxter, Richard, poems: see Poetry Index
Bays, a humming-bird, 22-5752
Bayard, Pierre du Terrail, Chevalier de, French hero, 1-138
Bayasid, sultan of Turkey, mosque of, 13-3243
Bayberry, a plant, 20-5215-16
Bay Colony: see Massachusetts Bay Colony
Bayeux, famous for tapestry, 3-590
Bayeux, Cathedral of, in France, 16-4173
Bayley, Ada Ellen: see Lyall, Edna
Bayley, Thomas M., song writer, 14-3766-68
"Bay of Biscay", by Cherry, 14-3768
Bay Psalm Book, arrangement of, 23-6115
 printed by Daye, 12-3049
Bayreuth, and Wagner, 13-3293
Bay-rum, of St. Thomas, 8-2158
Bay-tree, of West Indies, 8-2158
Bazars, of Cairo, 23-6180-81
Bazains, Marshal, in Mexico City, 17-4396
Beach, games to play on, 19-5121
 Tennyson's comment on, 17-4584
Beach-grass, a grass, 5-1342
Beach-plum, a fruit, 20-5219
Beachy Head, lighthouse at, 3-750-51
Beaconsfield, Lord, comment on Grant, 3-789
 see also Disraeli, Benjamin
Beads, what to do with, 8-2033
Beagle, ship, 4-870
Beak, Captain, character in "Pendennis," 13-3520
Beaks, of birds, 6-1508; 7-1644, 1754, 1760; 8-1983, 2078, 9-2345; 22-5752
Beam, of a ship, 18-4619
Beams, rolling steel, 22-5703-04
Beams, rolls of warp, 19-4892
Beans, Dr., and Key, 21-5494
Beans, Burbank's, 14-3565
 cultivation of, 12-3217; 12-3225; 17-4387
 growth of, 9-2384; 15-3813-14
 jumping, 10-2474
 lima, 14-3554
 planted by Indians, 1-16
 wild, 11-2884
Bean-setting, a dance, 11-2805; 13-3323
Bean-stalk, Jack and the, 12-3207
Bear, an animal, 1-153, 161; 15-4060; 22-5801
 and the chipmunk, 5-1110
 and the little wolf, 21-5520
 Australian: see Koala
 baste the, 8-1096
 carved in Switzerland, 12-2992

GENERAL INDEX

- Bear**, children saved, 23-6025
 feed on salmon, 10-2703
 fur of, 19-5074
 hibernation of, 24-6372
 how he lost his tail, 5-1105
 in story, 7-1905
 in the well, 19-4990
 on canal-boat, 18-4768
 polar, 1-158, 161; 4-1075; 13-3446; 22-5803
 preys on lemmings, 3-805
 Teddy, in shadow, 20-5353
 three bears, 5-1201
 travelers, and the, 17-4346
 young of polar, 21-5666
- Bearberry**, a plant, 20-5215, 5219
- Beard**, Dan, and boys, 23-6135
- Bear-Hunt**, story of a, 8-1956
- Bear-Tamer**, a statue, 18-4667, 4672
- Bear-weed**: see Skunk-cabbage
- Beast**, Beauty and the, 11-2760
- Beast**, Elatant, character in "Faerie Queene," 3-702
- Beat**, of sound, 19-5062
- Beatrice**, Shakespearean character, 3-563
- Beatrice**, undying love of, 4-982
- Beatriz**, character in "Henry Esmond," 13-3309
- Beaucaire**, in "Tartarin of Tarascon," 18-4640
- Beaulere**, nickname of Henry I, 3-590
- Beauharnais, Joséphine de**: see Joséphine, empress of the French
- Beaujeu, Captain**, defeated Braddock, 4-896
- Beaumont, Francis**, English dramatist, 21-5489
- Beauregard (Pierre G. T.)**, Confederate general, 8-2047
- Beautiful Princess**, 4-1052
- Beauty**, and the Beast, 11-2749
 of one's self, 20-5395
 sleeping, 7-1708
 spirit of: see Venus, goddess
 what is? 8-2011
- Beaux, Cecilia**, American painter, 16-4252, 4255
- Beaver**, description of, 3-676, 678; 15-4060; 19-5072
 fur-bearing animal, 19-4831; 19-5076
 home of, 21-5573
 skin as unit of trade, 18-4834
 young of, 21-5664
- Beaver Lake**, in Yellowstone Park, 3-583
- Bébé est Malade**, a French play, 5-1300
- Bec**, abbey of, 18-4791
- Bec**, Abbot of, 18-4793
- Bechuanaland**, Moffatt settled in, 2-300
- Becker, Charlotte**, poems: see Poetry Index
- Beckwith, J. Carroll**, American painter, 16-4252
- Beccuquel, Monsieur**, and radium, 3-648
- Bed**, sleeping in damp, 13-3384
- Bed-clothes**, over face, 8-2249
- Beddoes, Thomas Lovell**, poems of: see Poetry Index
- Bede, The Venerable**, English historian, 2-466; 13-3482; 15-3935; 17-4451-52
- Bedeismen**, the king's, 7-1668
- Bedford, Duke of**, in France, 1-130
- Bedford, England**, gaol of Bunyan, 7-1746
- Bedivere, Sir**, of the Round Table, 13-3371
- Bedonebyasyoudid, Mrs.**, character in "Water Babies," 15-3830
- Bedouins**, nomadic tribes, 15-3861; 16-4297; 23-6097
- Bedposts**, Sheraton, 23-6175
- Bedroom**, air in, 7-1804
- Beds**, box, 7-1804
- Bedstraws**, flower of, 15-4016; 16-4660
- Bedwin, Mrs.**, character in "Oliver Twist," 10-3565
- Bee-bread**: see Pollen
- Beech**, a tree, 11-2878; 13-3259; 14-3733; 20-5852; 21-5438
- Beech-drops**, a plant, 12-3068; 15-4015
 false: see Pine-map
- Beecher, Harriet**: see Stowe, Harriet Beecher
- Beecher, Henry W.**, a divine, 8-2043
- Beecher, Rev. Lyman**, father of Harriet, 8-2086
- Beechwood**, in "John Halifax," 15-3975
- Beech-wood**, flowers in, 15-4015
- Beef**, production in United States, 10-2677
- Beef-extract**, food value of, 13-3273
- Beefsteak-Tungus**, a mushroom, 19-face 4882, 4884
- Beef-tee**, food value of, 19-3183
- Bee-Hive**, a geyser, 3-587
- Bee-jelly**, food for bees, 11-2852-54
- Bee-killer**: see King-bird
- Beeleebub**, character in "Pilgrim's Progress," 5-1181
- Bee-milk**: see Bee-jelly
- Bee-moth**, destructive to wax, 11-2858
 in hives, 12-3021
- Bee-orchids**, a plant, 17-4478-79
- Beer**, souring of, 24-6364
- Bees**, and flowers, 15-3813-14, 3816, 4015
 and honey, 12-4878
 and moths, 12-3021
 and thyme, 18-4655
 and wasps, 11-2849
 battle of the, 20-5394
 birth of, 11-2853
 buttercups and, game, 14-3556
 communication of, 22-5813
 death of, 15-4020
 eye of, 8-2337
 get honey from linden, 13-3261
 humming of, 4-911
 intelligence of, 8-672
 leaf-cutting, 11-2857
 sting of, 3-816; 15-4020
 story of, 11-2849
 vision of, 15-4262
- Beet**, cultivation of, 12-3217; 17-4387
 in Germany, 11-2764
 the sugar: see Sugar-beet
- Beethoven (Ludwig van)**, composer, 6-1413; 13-3284, 3290-91; 14-3772; 15-4002
 musical instruments used by, 8-1088
- Beetle**, and rubber, 22-5793
 mimicry of, 12-3449, 3453
 protective devices of, 13-3453-54
 various beetles, 12-3194-95, 3199, 3200
 see also Fire-fly, Glow-worm, Insects, Lady bird, Scarabæus, Water-beetle
- Begbie, Harold**, poems: see Poetry Index
- Beggar-maid**, Cophetua and the, 4-822
 story of, 4-824
- "Beggars"**, Dutch patriots, 14-3544
- Beggar-ticks**, plants, 19-5092
- Behistan**, Rock of, 13-3484; 19-4958; 20-5148
- Behrend, John**, built pianos, 5-1088
- Behring Straits**, naming of, 14-3726
- Bel**, temple of, 5-1323; 19-4961
- Belch, Sir Toby**, Shakespearean character, 2-441
- Belcher, Andrew**, and Harvard students, 4-962
- Belcher (Sir Edward)**, British explorer, 21-5445
- Belcourt**, French city, 9-2420
- Belges**, natives of Belgium, 14-3541
- Belgard, Castle of**, in "Faerie Queene," 3-703
- Belgian Congo**, in Africa, 4-1016; 14-3550, 3732; 18-4305
- Belgians**, artificial leather of, 11-2834
 in Canada, 14-3732
- Belgium**, arms of, 7-1658
 capital of, 14-3549
 fruit in, 3-655
 government, at Havre, 9-2291; 14-3530
 history of, 10-2559; 14-3538, 3548, 3550; 22-5850
 in Africa, 2-302; 16-4305, 4308
 map of, 14-3547
 mussels in, 15-3853
 national song of, 14-3772
 Roman church in, 10-2552
 work-dogs in, 2-508
- Belgrade**, capital of Serbia, 11-2900; 12-3238; 13-3242, 3244; 21-5658
- Belgrano, Manuel**, Argentine general, 20-5361
- Belin**, saved by Eustache, 18-4800
- Belisarius**, Roman soldier, 11-2940; 12-3188-89
- Bélit**, the god, 19-4966
- Belize**, Central American port, 23-6047
- Bell, Alexander G.**, and talking-machine, 21-5602
 and telephone, 2-336; 17-4446
- Bell, Alexander M.**, educator, 17-4446-47
- Bell, Chichester**, and talking-machine, 21-5602
- Bell, Rev. Frank**, character in "Pendennis," 13-3516
- Bell, Henry**, and steam-navigation, 10-2486-87, 2490
- Bell (John)**, British sculptor, 19-5040
- Bell, John**, candidacy of, 8-2044
- Bell, Laura**, character in "Pendennis," 13-3516
- Bell, "Belle"**, in "The Chimes," 9-2300
 called Big Ben, 6-1545
 called Great Paul, 6-1545
 electric, 10-2585; 12-3229
 for Morris dances, 11-2805
 in otter-hunting, 12-4837
 modeling a, 23-6167
 of Christian churches, 18-4745
 under the sea, 24-6317
- Bella**, character in "Abbé Constantin," 18-4754
- Belladonna**, a medicine, 16-4656
 effect of, 14-3810; 20-6107

GENERAL INDEX

- Belladonna** lily, a plant, 20-5230
Bellamoun, Sir, character in "Faerie Queene," 3-702
Bellario, Doctor, Shakespearian character, 2-332
Bell-bird, a bird, 7-1757, 1764
Belle Isle, Canada, 1-223
Belle Isle, Straits of, 3-554
Bellenden, Edith, character in "Old Mortality," 7-1776
Bellenden, Lady Margaret, 7-1776
Bellerophon, myth painted, 7-1688
Belleve Hospital, in New York, 18-4629
Bellflower, family of plants, 16-4136
 see also Campanulas
Bellin, the Ram, 21-5569
Bellini (Vincenzo), Italian composer, 13-4294
Bellini Family (Jacopo, Gentile, Giovanni), Venetian artists, 5-1174, 1176, 1178
Bellows, of Jack's House: see Jack, House of
Bell-push, in clay, 23-6004
Bell-Book, lighthouse on, 3-750
Bell-tower, of Venice: see Campanile of St. Mark's
Bellwort, a flower, 11-2881-82
Belmont, home of Portia, 2-330
Belocchi's, costume of, 15-3931
Belphoebe, character in "Faerie Queene," 3-699, 701-02
Belshazzar, king of Babylon, 19-4970; 20-5146
Belt, making a beautiful, 5-1298
Belts, Danish waterways, 14-3658
Beluga, 4-1074
Bemerton, garden of Herbert, 8-2015
Benares, king of, 18-4084
"Ben Bolt", by English, 13-3054; 14-3768
Bend, fisherman's, 13-3326
Benedetto, character in "Count of Monte Cristo," 17-4434
Benedick, Shakespearian character, 3-563
Benedict, St., story of, 4-1028
Benedictine, nuns, in Paris, 6-1500
Bengal, history of, 18-4079
 Indian province, 3-703; 7-1718
 princess of, 4-974
Ben Hur, Judah, character in "Ben Hur," 20-5257
"Ben Hur", by Wallace, 20-5256-57
Benjamin, Judah P., Confederate lawyer, 24-6335, 6338
Bennett, William Cox, poems: see Poetry Index
Bennington, Vt., battle of, 4-1004
Benson, F. W., paintings of, 7-1688
Bentham, Jeremy, philosopher, 16-4156
Bentivoglio, Cardinal, portrait, by Lorraine, 18-5108
Benton, Mary, bravery of, 8-1955
Benton, Thomas M., American statesman, 10-2441-42
 story of Jackson, 3-784
Benna River, in Africa, 18-4300
Benvenuto, Shakespearian character, 2-447
Bensine, from coal-tar, 3-416; 7-1891
Bensol, Edison and, 24-6351
 from coal-tar, 2-416
Beothuks, natives of Newfoundland, 24-6293
Beowulf, story of, 13-3502, 15-3935
Béranger, Pierre Jean de, poems: see Poetry Index
Barbary, in Morocco, 16-4307
Benengaria, Queen, goodness of, 18-4745
Bergen, Norwegian town, 14-3654, 3662
Bering, Vitus, Danish navigator, 14-3726; 15-4057; 21-5458
Berkeley, Bishop, saying of, 7-1686
Berkeley, Sir William, governor of Virginia, 2-530, 533
Berkeley, university at, 17-4574
Berkshires, breed of hogs, 10-2681
Berlin, built on mummulites, 8-3406
 capital of Prussia, 10-2596; 11-2760
 fire in, 22-5756
 history of, 11-2761
 route to Russia, 15-3798
Berlin Decrees, of Napoleon, 10-2593
Berlin, Treaty of, and peace, 13-3242, 3244
Berlin, University of, and education, 11-2762
Berlioz, Hector, composer, 12-3293
Bermuda, islands of, 3-272; 23-6043
Bernadotte (John): see Charles XIV
Bernard, Miss, married Sir John Macdonald, 16-4324
Bernard, St., and the second Crusade, 15-4029, 4032, 4037
 hymns of, 6-2013
 of Clairvaux, 6-1553
Bernard, Thomas, of Jamaica, 18-4324
Berne, capital of Switzerland, 12-2984-86; 22-5841
 convention held in, 3-812
Bernhardt, Sarah, French actress, 20-5138, 5144; 24-6336
Bernini (Giovanni L.), Italian sculptor, 16-4173
Bernstein, Baroness, character in "The Virgilians," 13-3421
Berries, Burbank's varieties of, 14-3564-65
 of Alaska, 15-4040
 sacred of Pe-la, 20-5283
Bertalda, in story, 15-4053
Bertha, character in "Cricket on the Hearth," 9-2303
Bertram, Count of Roussillon, 2-328
Bertram, Godfrey, character in "Guy Mannerling," 6-1626
Bertram, Harry, character in "Guy Mannerling," 6-1626
Bertram, Lucy, character in "Guy Mannerling," 6-1627
Bertuccio, character in "Count of Monte Cristo," 17-4434
Beryl, precious stone, 24-6277, 6380-81, 6383
Bérylone, character in "Blue Bird," 22-5835
Bessemer, Sir Henry, steel process of, 22-5689-90, 5698
Bessemer-converters, in steel-making, 22-5689-90, 5700
Best Friend, a locomotive, 3-605
Bethelgeux, a star, 10-2645
Beth, character in "Little Women," 2-2098-99; 20-5169
Beth Galert, a cairn, 20-5385
Bethlehem, and St. Jerome, 15-4020, 4037
 birthplace of Christ, 20-5280
 church at, 20-5384
 pilgrimages to, 15-3856
"Bethrothed", story of the novel, 6-1495
Betty, lost her way, 23-6132
"Beulah", by Evans, 8-2098
Beulah, in "Pilgrim's Progress," 5-1185
Beval, use of, 8-1939
Beverly, shoe-factories at, 12-3103
Bézuquet, character in "Tartarin of Tarascon," 18-4640
Bhaer, Professor, character in "Little Women," 20-5172
Bhils, in British Empire, 18-4081
Bianca, Shakespearian character, 3-642
Bible, English in, 8-2351
 Gutenberg's, 14-3609
 in Winnipeg, 22-5946
 Luther's, 10-2555
 names of, 3-688
 reading the, 21-5485
 schools for reading, 10-2557
 stars mentioned in, 10-2645
 translations of, 3-773; 4-856; 10-2555; 15-3941-42; 23-6115
 verse contains all letters, 13-3433
Biceps, a muscle, 16-2648-49
Bichonne, a dog, 20-5181
Bi-concave: see Concave
Bicycle, earliest, 23-6055
 rubber tires for, 22-5794
 spinning of wheels of, 3-693
 to clean, 17-4494
 uprightness of, 11-2910
Biddy, and the tallow-dip, 4-1065
Bideford, in "Westward Ho!" 14-3713
Bienna, Lake, in Switzerland, 12-2982, 2984
Biennial, kind of plant, 15-3814
Bierstadt, Albert, American painter, 18-4220
Big Ben, a bell, 6-1545
Big Ben, a clock, on Westminster, 6-1538, 1544-45
Big Bertha, a gun, 23-6148
Big Eagle, an Indian, 7-1673
Big-Indians, exiles, in "Gulliver's Travels," 5-1337
"Big-heads": see Malcolm Canmore
Big Kick, Boons at, 24-6253
"Biglow Papers", by Lowell, 6-1619
Bilberries, fruits, 16-4136; 17-4558; 18-4760, 4763
Bile, produced by liver, 9-2365-66; 23-6015
Bilge, of a ship, 12-4618
Bill, the Lizard, character in "Alice in Wonderland," 11-2962; 12-3163
Billiard-balls, and sound-waves, 19-4870
Billings (William), songs of, 14-3649
Billy, and the rattlesnake, 6-1955
Bina, a savage, 22-6017; 24-6287, 6240
Binder, agricultural machine, 16-4150
Bindweed, a weed, 18-4212-13

GENERAL INDEX

- Bingen**, on the Rhine, 11-2765
Bingo, a game, 10-2590
Biot, J. B., French chemist, 24-6364
Biplane, various types of, 1-176, 180, 185
Birch, a tree, 11-2877; 13-3258; 14-3733; 21-5436, 5438
 why it has rings, 22-5775
Birch-bark, for paper, 4-961
 Indian use of, 11-2782
"Birchlegs", Norwegian party, 14-3654
Bird-girl, with the golden wings, 7-1812
Birds, and semi-circular canals, 15-3999
 and Walther, 13-3394
 brains of, 14-3687
 brazen-winged birds, 20-5185
 carry seeds, 15-3813, 3890
 cast feathers, 9-2350
 choosing their king, 9-2403
 Christmas-tree for, 9-2263
 cutting claws of, 20-5176
 development of, 3-870-75; 4-873 14-3668
 drowned and buried, 11-2917
 eat acorns, 15-3896
 eaten by ants, 11-2974
 eggs of American, 7-1760, face 1756, 1760
 Egyptian hunting, 18-4852
 exhibits of, 20-5330, 5333
 find way, 6-1417
 flesh-eating, 7-1898
 flight of, 14-3568, 3589; 15-3887
 forsake nests, 21-5639
 freed by Napoleon, 8-1330
 gizzard of, 9-2363
 golden, 4-888
 haunts of, 17-4565
 heat of, 6-1509
 homes for, 21-5517
 homes of, 22-5745
 imaginary, 1-217
 Indian cookery of, 10-2578
 killed for plumage, 9-2340-41; 23-5960
 longest-tailed, 23-6217
 made at dinner-table, 9-2267
 migration of, 2-516, 518; 9-2340
 mites on, 13-3364
 monster, 13-3374
 nests of, 4-917; 7-face 1760
 of beauty, 7-1753
 of Canada, 12-3152; 13-3455
 of prey, 9-2342
 of streets, trees and streams, 9-2212
 of the ocean, 7-1639, 1646
 oil for sea-birds, 6-1503
 out of drawing, 19-4925
 prehistoric, 1-53
 puzzling, 21-5523
 sacred, 6-1976; see also Isis
 Saint Francis and, 4-1022-23
 selection of mates, 16-4113
 some singing, 8-2104
 song of, 18-4693
 spider that catches, 13-3361, 3363
 talk of, 5-1287; 22-5813
 teeth of, 8-1982, 2078
 that cannot fly, 6-1502; 12-3229
 that serve us, 6-1557
 that swim and climb, 6-1971
 tracks of, 7-1854
 various kinds of, 3-677
 vision of, 16-4263
 warm-blooded, 3-571, 573; 4-873
 what wakes, 13-3511
 why do not fall, 4-918
 why not fly alike, 11-2736
 see also Eggs, Feathers, collection of, etc.
Birdseye: see Germander-speedwell
Bird's-nest orchid, of Britain, 17-4479
Birds-of-Paradise, beauty of, 7-face 1752, 1755, 1758
Birrus latro, a crab, 10-2614
Birkenhead, troop-ship lost, 7-1818, 1820
Birmingham, city in Alabama, 23-5960
Birmingham, English town, 4-1042; 18-4801
Birman Wood, advancing on Dunsinane, 5-1299
Birn Wundrod, and tower of Babel, 19-4969-70
"Bird of Venus", by Botticelli, 19-5102
Birchlight, meaning of, 14-3781
Birthstones, for birth months, 24-6377
Biscoe, English navigator, 21-5464
Biscotin, a child, 20-5181
Biscotin, a child, 20-5181
Biscotin, of china, 17-4547
Bishaim, Arab tribe, 22-6099
Bishop, Sir Henry, music writer, 14-3769
Bishop, of Great Britain, 10-4791
Bishop, of the church, 18-4789
 power of the bishops, 14-3542
 St. Ambrose made a, 15-4030
Bishop, a rock, 5-1311
Bishop Ridley College, in Canada, 21-5402
Bishop's-Capi, see Miterwort
Bismarck, Prince Otto E. L. von, chancellor of Germany, 9-2290, 10-2595, 2597-2600; 11-2773
 in Dropping the Pilot, 11-2771
 statue of, 11-2762
Bismarck Island, 6-1493
Bison, American, 1-15; 3-586; 21-5609
 in Yellowstone Park, 3-586
 see also Buffalo
Bit, of key, 24-6359
Bites, treatment for, 13-3440; 19-5033
Bito, a dutiful son, 9-2315
Biton, a Greek, 5-1321
Bitter, Karl, American sculptor, 18-1675
Bitterling, a fish, 10-2706-07
Bittern, bird, 8-1973-74; 9-2341
Bitter-root, state flower, 22-5816
Bittersweet (Celastrus), a shrub, 17-4563-64
Bittersweet (Solanum), a vine, 17-4353
Bivalves, armored sea-animals, 10-3616
Bixet (Alexander C. L.), composer, 13-3294
Bjornson, Bjornstjerne, Norwegian writer, 20-5314
Black, and heat, 17-4373
 color of black men, 1-48
 how made, 8-1951
Black alder, a shrub, 17-4565
Blackamoors, king of, 2-396
"Blackbeard", a pirate, 2-532
 see also Teach, Edward
Blackberries, English, 3-660
 fruits, 18-4763; 19-5084
 white, 14-3565
Blackbird, age of, 9-2350
 character in "Blue Bird," 22-5838
 egg of, 7-face 1756, 1760
 of Europe, 8-2109, 2112-13; 9-2345; 12-3156, 22-5746
 redwinged, 13-3459
Blackcap, a bird, 7-face 1760, 8-2107-08, 2111
Blackcock, a bird, 6-1559, 1561-62
"Black Death", an epidemic, 3-772; 4-1042, 14-3654, 24-6368
Black Dog, in "Treasure Island," 14-3632
Black Eagles, Cuban organization, 23-6046
Black-eye, treatment of, 17-4383
Blackfeet (or Blackfoot), Indian tribe, 10-2577, 2579; 11-2785, 18-4622, 4838, 23-6144
Black Forest, in Germany, 11-2765, 2768
Blackfriars Theatre, and Shakespeare, 21-5580
Black game, 6-1559
Black George, Serbian patriot, 13-3242
Black Hawk War, Lincoln in, 3-786
Black Hole, of Calcutta, 7-1718
Blacking-box, how to make, 10-2517
Black Knight, character in "Ivanhoe," 7-1666
Black Prince, Great Hall of the, 3-771
 see also Edward, the Black Prince
Black Robe, and White Heart, 23-6143
"Black Rock", by Connor, 16-4327
Blacks, of Australia, 6-1368, 1186
Black Sea, in Europe, 12-3185, 3194; 14-3721, 3726, 3728; 15-3855
Black Sea Riviera, of Russia, 10-247; 15-3798
Black-tail: see Deer
Blackthorn, a game, 5-1096
Blackthorn, a plant, 14-3534; 16-4134
Blackwall-hitch, of a rope, 13-3326
Blackwell, Elizabeth, first woman doctor, 12-3123
Bladder-nut, a shrub, 18-4759
Bladders, for telephone, 1-247
Bladder-wrack, a sea-weed, 6-1421
Blair, Frank F., and General Lee, 17-4466
Blair, Montgomery, Postmaster-General, 8-2010
Blake, Matthew, character in "Charles O'Malley," 12-2975
Blake, Patsy, 5-1146
Blake (Robert), English admiral, 4-1040; 7-1862, 14-3547
Blake, William, poems: see Poetry Index
Blakelock, Ralph A., American painter, 16-4250
Blanc, Mont, Alpine peak, 9-2416; 12-2981
Blanchard (François), French astronaut, 22-5810
Blanchard, Thomas, machines invented by, 11-2718
Blanche Mel, ship, 10-2507
Blanco, Cape, in Africa, 16-4308
Blanco, Gasman, president of Venezuela, 16-4601
Blankets, of Indians, 20-5328
Blashfield, E. M., American painter, 16-4258

GENERAL INDEX

- Blast-furnace**, for iron, 22-5694
see also Furnaces
- Blaxland**, explored Australia, 2-365
- Blackberry**: see Bilberry
- Black**, a fish, 10-2707-08
- "Black House"**, by Dickens, 10-2459
- Bleeding**, control of, 6-1596; 16-4201; 18-4616
of arteries and veins, 18-4928
without injury, 18-4880
- Bleeding-Heart**, flower, 3-616
- "Bleeding-Kansas"**: see Kansas, fighting over
- Blifnson**, in "Gulliver's Travels," 5-1333, 1337
- Blenheim**, battle of, 3-546; 10-2560
battle of, puzzle picture, 4-930
- Blenny**, a fish, 6-1421; 10-2600
- Blériot (Louis)**, flight across channel, 1-176
- "Blessed Damsel"**, by Rossetti, 23-6039
- Blewett, Jean**, poems: see Poetry Index
- Blimber, Dr.**, character in "Dombey and Son," 10-2566
- Blind**, hearing of the, 15-3909
how they learned to read, 8-1995
sensations of, 15-3907
touch of, 21-5516
- Blind-alley**, occupations called, 23-6217
- Blind-man**, Mr., character in "Pilgrim's Progress," 8-1183
- Blind-man's breakfast**, a game, 19-5035
- Blind-man's stab**, a game, 19-5035
- Blindness**, of young animals, 7-1885
- Blind-partners**, 19-5035
- Blinds**, of duck-shooters, 6-1564
- Blind-worm**, a lizard, 5-1211, 1218
- Bliss**, Bower of, in "Faerie Queene," 3-700
- Block**, guard the, 14-3642
- Blockade**, of American coast, 6-1398
of English ports, by France, 6-1397
of Southern ports, 8-2047, 2052; 23-5958
- Blockade-runners**, ships, 8-2052
- Block-game**, with dominoes, 15-4044
- Block Houses**, in New York, 19-5014
- Blots**, Charles, Count of, and Joan of Brittany, 10-2508
- Blomidon, Cape**, in Nova Scotia, 21-5550
- Blondel**, and Richard Cœur de Lion, 23-6194
- Blood**, aliveness of, 22-5891
and digestion, 8-2367
and fainting, 5-1163; 10-2470
carries air, 3-814
causes hunger, 13-3510
cells of the, 5-1122; 6-1429, 1459; 15-3980;
21-5622; 22-5725; 23-5991, 6110; 24-6309
circulation of, 6-1593; 7-1647; 16-4201; 18-4616;
19-4880; 21-5622; 23-6106, 6108; 24-6309
coldness of, 17-4587
color of, 6-1430-31
convection of heat in, 16-4233
food and, 22-5902
makes us red, 14-3685
of the Saviour, 18-4682
of tired animal, 7-1879
specific gravity of, 15-3828-29
studies on circulation of, 18-4631
temperature of, 4-873
see also Harvey, William
- Bloodhounds**, and cannawary, 6-1508
used for trailing men, 2-509
- Blood-month**, November, 17-4537
- Blood-plates**, cells of the blood, 6-1461-62
- Blood-root**, flowers of, 11-2879, 2881
- Bloods**, Indian tribe, 23-6114
- Bloodstone**, a gem, 24-6377, 6379
- Blood-vessels**, in lungs, 24-6308
nerves that control, 14-3599
of body, 6-1593
see also Arteries, etc.
- Bloom**, of grape, 22-5893
- Bloomers**, for doll, 4-848
- Blossoms**, picture, by Albert Moore, 16-frontis.
- Blotter**, how to make, 18-4291
- Blotting-paper**, absorbs ink, 8-2082
- Blow**, in gas-making, 3-418
- Blow-by**: see Blue-bottle
- Blow-gun**, use of, 19-6077
- Blubber**, as food, 11-2732; 12-3231
of sea-animals, 4-1070, 1076
- Blücher**, Gebhard L. von, Prussian general, 9-2289; 10-2594; 17-4366, 4368
- Blue**, Captain, and Miss Dollie, 19-5109
- Blue**, cause of color, 13-3387
color of hands, 22-5889
color of veins, 12-3144
combinations of, 8-1951
dye of wood, 16-4132
eyes of, 16-4330
- Blue**, in fire-flame, 22-5892
in flag, 20-5397; 21-5491
of sky, 20-5398
primary color, 1-166; 10-2896; 17-4524
Prussian, 20-5177
waves of, 7-1796
- "Blue-Beard"**, authorship of, 6-1477
- Bluebells**, arrangement of, 3-623
of England, 18-4658; 20-5230
of Scotland, 18-4656, 4658
various, 18-4658
- Blueberries**, fruit, 3-651, 655; 17-4558
- Bluebird**, a thrush, 13-3464
egg of, 7-face 1756
nest of, 22-5751
- "Blue-bird"**, by Maeterlinck, 6-1483; 20-5314
story of, 22-5835, 5837
- Blue Birds**, organization of girls, 14-3752
- Blue-blindness**, what it is, 17-4525
- Bluebonnet**, state flower, 22-5816
- Bluebottle**, an injurious insect, 12-3201, 3204;
15-3816
- Bluebottle**, plant: see Cornflower
- Blue Boy**, a picture, 4-frontis; 17-4590
- "Blue-Coat Boys"**, costume of, 4-859; 13-4731
- Bluecoat School**, founded by Edward VI, 4-859
- Blue Dragon Inn**, in "Martin Chuzzlewit," 10-2673
- Blue-eyed-grass**, a flower, 12-3064
- Blue-eyed-stranger**, a dance, 11-2805
- Blue-Gowns**: see King's Bedesmen
- Blue-grass**, grown for hay, 9-2384
- Bluing**, stains of, 21-5644
- Blue-jay**, a bird, 7-1762; 9-2213, 2344; 13-3459
see also Jays, birds
- Blue Lick**, and Boone, 24-6250
- Blue M. Freighters**, ships, 20-5377
- Blue Mountains**, of Australia, 6-1368
- Blue Nile River**, in Africa, 2-299; 16-4306
see also Nile River
- Blue-stocking**, derisive term, 12-3120
- Blue-tit**, a bird, 7-face 1752; 23-5745
- Blue-weed**: see Viper's bugloss
- Bluff King Hal**, a dance, 11-2805
- Blumenfeld**, on Boy Scouts, 23-6140
- Blunderbore**, a monster, 7-1810
- Blush**, cause of, 6-1598; 23-6109
- Boa-constrictor**, a serpent, 6-1378, 1380, 1387
see also Water-boas
- Boadicea**, queen of England, 1-210, 211; 2-478
- Boar**, and Hercules, 20-5185
fox and the, 15-3878
of Erymanthus, 13-3374
variety of pig, 2-413, 414
- Boat**, and air-pressure, 22-5738
- Boatbill**, bird, 8-1973, 1975
- Boat-dwellers**, of the Mississippi, 23-6072
- Boatmen**, of Thames, 10-2492; 23-6051
- Boats**, bridge of: see Bridge of Boats
centre of gravity of, 15-3882, 3885
driven by camphor, 21-5642
fleet of little, 15-3900
flying: see Flying-boats
made of paper, 8-1941
modeling a, 23-6167
of the Nile, 18-4844, 4848, 4850
on the Mississippi, 6-1391; 23-6073
taxed by Spain, 7-1836
torpedo: see Torpedo-boats
- "Bobbies"**, London police, 20-5397
- Bobbins**, for cotton, 19-4888-89, 4891
- Bobolink**, in the rice-fields, 9-2345
- Bohs**, coasting on, 20-5221
- Bobwhite**: see Quail
- Boccaccio, Giovanni**, Italian writer, 20-5307, 5310
- Bodies**, effect of air-pressure on, 16-3983
falling, 7-1674, 1679, 1681; see also Gravitation
hollowness of, 9-2245
motion of, 14-3674
perpetual motion of, 14-3590
- Bodkin, Mr.**, character in "Charles O'Malley," 12-2975
- Body**, bones and arteries of, 16-4200
changes in, 22-5895
division of labor in, 20-5305
heat of, 3-692; 8-2088; 18-4110
how built up, 10-2463
making of the, 3-671
master of the, 18-4747
power of human, 3-648
upright attitude of, 15-3884
- Boerhaave, Hermann**, Dutch doctor, 18-4631
- Boers**, of South Africa, 7-1780
- Boer War**, 5-1120
- Boetia**, Greek state, 20-5202, 5208

GENERAL INDEX

- Boethius**, Roman philosopher, 15-3941
Boffins, characters in "Our Mutual Friend," 10-2462
Bogan, Mrs.: see Nairne, Lady
Bog-bean: see Buck-bean
Boges, character in "Egyptian Princess," 23-5953
Bog-mosses: see Sphagnum
Bog-myrtle, a plant, 15-5091
Bogota, capital of Colombia, 18-4604
Bogs, flowers of, 19-5085
Bohemia, King of, Shakespearian character, 3-562
 king of, at Cressy, 3-772
Bohemia, gems from, 24-6379
 history of, 10-2558, 2594; 13-3482; 14-3772
 see also Austria-Hungary
"Bohemian Girl", opera by Balfe, 13-3294; 14-3771
Bohemund, of Tarentum, 6-1551
Boiler, of locomotive, 2-304-05
Boiling, effects of, 21-5513
Boiling-point, of water, 2-519
Bois, **Sir Rowland de**, Shakespearian character, 3-637
Bois de Boulogne, in Paris, 21-5538
Boisé River, dam across, 12-2710; 21-5418
Bois-Guilbert, **Sir Brian de**, character in "Ivanhoe," 7-1663
Boker, George Henry, poems: see Poetry Index
Bokhara, costume of, 15-3931
Bolan Pass, between India and Afghanistan, 6-1630; 15-3925-28
Boleslav I, king of Poland, 11-2902, 2904
Boletus, edible, 19-face 4882
 poisonous mushroom, 19-face 4880
Boleyn, Anne, queen of England, 4-858
Bolingbroke, Henry: see Henry IV, of England
Bolivar, Simon, president of Colombia, 17-4514; 18-4603, 4606, 4608
Bolivia, history of, 20-5362, 5364
 Indians of, 17-4509
 Republic of, 18-4606
 rubber in, 23-5793
Boll, of cotton, 19-4885
Boll-weevil, destroyed by other insects, 13-3300
 injurious to cotton, 12-3203-04
Bologna, Giovanni, Italian sculptor, 16-4173
Bologna, Italian city, 12-3080, 3082, 14-3610
Bologna, University of, medical school, 18-4630
Bolt, form of protection, 24-6357
 of a lock, 24-6359, 6362
Boiling-cloths, for flour, 5-1139
Bolton, Fanny, character in "Pendennis," 13-3519
Boma, town in Africa, 16-4306
Bomb, to depths, 22-5860
Bombardier-beetle, an insect, 13-3454
Bombay, gift to Charles II, 7-1716, 18-4078
 port of India, 6-1634
Bombs, dropped by aviators, 1-174, 179
Bombyx Mori, the silk-worm moth, 7-1826
Bonaparte, Hon. Charles, grandson of Jerome Bonaparte, 19-4945
Bonaparte, Francis Joseph Charles: see Rome, king of
Bonaparte, Jerome, and the Water-Seller, 3-764
 king of Westphalia, wife of, 19-4942
Bonaparte, Jerome Napoleon, life of, 19-4944-45
Bonaparte, Joseph, king of Spain, 8-1953, 13-3341, 3346; 17-4366, 4368
Bonaparte, Napoleon: see Napoleon I, of France
Bonar, Dr. Horatius, poems: see Poetry Index
Bonavista, town in Newfoundland, 24-6296
Bonds, issued by Congress, 6-1435
 what they are, 23-5998
Bone, for china, 17-4540-51
 for cutlery, 18-4804
 for fertilizer, 4-868, 10-2686; 16-4144
 for fuel, 15-4045
 for pins, 19-5001
 funny-bone, 10-2573
 growth of, 10-2463
 how to treat, 16-4288
 inner ear and, 15-3997
 keel-like, 6-1510
 lasts long, 1-187
 of body, 16-4200; 21-5622
 of cuttlefish, 10-2484
 petrous, 10-2570; 15-3916
 pictures on, 13-3479-80
 treatment of broken, 12-3440
 uses for, 2-408; 6-1430; 14-3572
Bones, Bill, in "Treasure Island," 14-3630
Boneset, a plant, 19-5086-87
Boneset, climbing, 19-5092
Bonheur, Marie Rosa, animal painter, 14-front1
Bon Homme Richard, ship, 12-3004
Boniface, St., in Germany, 15-4031-32
Bonn, German university town, 11-2768
Bonner, Robert, and Mrs. Southworth, 8-2095
Bonnet, Daniel, escape of, 7-1744
Bonnet, for baby-doll, 16-4199
Bonneville, Captain, and explorations of, 7-184
"Bonnie Blue Flag", Confederate song, 12-3054
Bonnie Prince Charlie: see Stuart, Charles Edward
"Bonnie Prince Charlie", song, 14-3770
Boobies, birds, 9-2340
Book-binding, process of, 4-953
Bookcase, of boxes, 11-2723
Book of Common Prayer, history, 4-859; 18-394
"Book of Songs", by Heine, 13-3399
Book of the Dead, 18-4846, 4848, 4850
Books, chained, 14-3607; 15-3935
 easier than lesson-book, 3-815
 Egyptian, 18-4846
 evolution of, 12-3106
 first famous, 1-73
 first of America, 12-3049
 first printed in England, 14-3612-13
 how to draw, 9-2375
 in early United States, 6-1394
 mending worn, 16-4294
 of Asia, 19-4960, 4965
 people who first wrote, 18-3909
 printing, 14-3615
 problem concerning, 5-1104
 royal, 4-860
 to cover, 21-5647
 trick with book, 5-1097
 wonder of, 4-943
 written in Latin, 12-3231
 see also Cylinders, Exercise-book, Papyri, Tablets, etc.
Bookshelves, making set of, 24-6279
Books, Story of Famous: see Tables of Contents
"Book-Books", a college song, 12-3054
Boom, of ship, 15-3959; 18-4620
Boomerang, Australian weapon, 2-364
 comes back, 13-3514
Booms, for logs, 16-4131
Boone, Daniel, pioneer, 7-1832; 24-6248-49
Boone, Jemima, capture of, 24-6253
Boone, Squire, brother of Daniel, 24-6253
Boone, Squire, father of Daniel, 24-6250
Boone Creek, tree on, 24-6252
Boonesborough, fort at, 24-6251, 6253
Booth, Edwin, statue of, 18-4668
Booth, John Wilkes, assassinated Lincoln, 3-787; 8-2054; 13-3493
Boots, lead in diver's, 14-3778
 pair of new, 24-6291
Borage, family of plants, 16-4186; 17-4352
Borax, production of, 10-2682
Bordeaux, French government of, 9-2290
Bordeaux, French port, 3-774; 9-2423
Borden, Robert L., premier of Canada, 5-1281, 6-1455; 16-4326
"Border Minstrelsy", by Scott, 9-2322
Border of White Man's Land, a statue, 18-4674
Boreas, god of the North Wind, 10-2638
Borers, of locust, 17-4562
Borlum, Gatson, American sculptor, 18-4664, 4674
Borlum, Solon, American sculptor, 18-4674
Boris, czar of Russia, 14-3724
Borneo, animals of, 3-627-30; 5-1213; 12-3033
 serpents of, 6-1382
Borromeo, Cardinal Carlo, and the plague, 5-1207
Born, king of Gaul, character in "Table Round," 4-883
Boroi, Russian wolf-hound, 24-6326
Boscawen, Admiral (Edward), in command of English navy, 4-890
Bosnia, and Herzegovina, 12-3242-43
 death of Archduke in, 12-3242
 history of, 11-2895, 2906; 12-3192
 settlement of, 12-3186
Bosnians, costumes of, 12-3245
Bosphorus, Straits of, between Europe and Asia, 6-1552; 12-3185-86; 12-3241, 3244; 18-3856, 3858
Boston, as fish market, 15-3843
 at the bottom of the sea, 11-2920
 early history, 6-1392
 evacuated, 4-1000
 fire in, 23-5757
 history of, 20-5399

GENERAL INDEX

- Boston**, port closed, 4-998
 shoe-factories at, 12-3103
Boston Common, meeting-place, 20-5399
Boston Massacre, account of, 20-5399
 engraved by Paul Revere, 4-998, 998
Boston Public Library, pictures in, 10-4248, 4250
Boston Tea-party, story of, 4-998
Bostwick, Helen M., poems: see Poetry Index
Boswell, James, and Johnson, 12-4727, 4729
 and Rousseau, 12-4154
Bosworth Field, battle of, 2-776; 4-855
Botanical Gardens, in New York, 19-5012
Botanists, study plants, 12-3892
Botany, founded by Linnaeus, 4-866
Botany Bay, history of, 2-365; 6-1368
Bot-flies, injurious insects, 12-3299, 3304
 see also Sheep-bot, Warble-fly
Boths, General Louis, 5-1120
Bothnia, Gulf of, 14-3652, 3660
Bothwell, character in "Old Mortality," 7-1776
Bothwell, Earl of, married Mary, Queen of Scots, 12-3142
Botondo Indians, of South America, 17-4509
Botta (Paul M.), explorer, 19-4964
Botteler, and Hanchen, 12-3000
Böttger (Johann F.), and porcelain, 17-4540
Botticelli (Sandro), Italian painter, 17-4590, 4593; 19-5097, 5102
Bottle, and Pascal's law, 15-3984
 for musical instrument, 21-5444
 lavender, 8-1841
 machine for blowing, 5-1269
 measures specific gravity, 15-3827
 of hot water, 12-3506
 of skin, 23-6102, 6183
 puzzle about, 1-110
 siphon: see Siphons
 sound of liquid coming from, 14-3774
 to clean, 17-4494
 tricks with, 1-106
 used for making butter, 5-1132
Bottom, a weaver, 2-327
Boundaries, or meat-driers, 23-6044
Bouch, Sir Thomas, bridge-builder, 1-24
Boucault (Dion), actor, music by, 14-3771
Bougainville, Louis A. de, French navigator, 2-2156
Boughton, G. H., pictures painted by, 2-525; 14-3545; 21-5672; 22-5675
Boukabar, in story, 6-1525
Boulogne, Napoleon at, 2-2288; 17-4366; 21-5534
Boulton, Matthew, partner of J. Watt, 2-600, 665; 10-2490
Bounce, of a ball, 19-5019
Bounce-about, a game, 5-1096
Boundary, dispute of Maine and Canada, 10-2442
 in Asia, 19-4962
 mountain pass, 22-5778
Boundary questions, settlement of, 13-3491
 South American, 12-4608
Boundary-stones, in Asia, 19-4962
Boundary-tug, a game, 19-5122
Bounderby, Josiah, character in "Hard Times," 10-2460
Bounding Elk: see Uncas
Bourdillon, Francis William, poems: see Poetry Index
Bourges, cathedral of, 16-4173
Bourville, death rate in, 11-2909
Boursaul, Charles, and speech by electricity, 2-336
Bow, and musical instruments, 5-1087; 19-5058
 for fire-making, 2-810
 made from yew, 21-5430
 of ribbon, 4-962; 16-4199
Bow Bells, and Whittington, 2-396
Bowdoin College, history of, 17-4568
Bowell, Sir Mackenzie, premier of Canada, 5-1281
Bowels, work of, 2-2365; 22-5902
Bower, the Virgin's: see Clematis
Bower-bird, arbor of, 3-877; 7-1758, 1760; 22-5752
Bowers, Lieut., on Scott expedition, 21-5466
Bowlin: see Mudfish
Bowhead-whale: see Whale
Bowl, early specimens, 5-1263
 flowers in, 3-623
 of folded paper, 12-4825
Bowles, Miss, portrait of, 17-4596
Bowles, William Lisle, poems: see Poetry Index
Bowley, Joseph, character in "The Chimes," 2-2300
Bowley, Lady, character in "The Chimes," 2-2300
Bowley Court, in "The Chimes," 2-2301
Boxline: see Knots
Boxing, game of, 4-965
Boxing Green, George III's statue on, 4-1005
 park in New York, 4-985; 19-5008
Boxing, game of, 4-962-63; 5-1096; 10-2522
Boxing, Sir John, hymns of, 2-2017-18
Box River, in Canada, 1-232; 22-5782
Boxspring, of ship, 15-3959; 18-4619
Box, a shrub, 4-981; 20-5352
Box, candle, and weight, 22-5871
 drawing a, 7-1729; 12-3173; 22-6162
 for bird's nest, 21-5517
 for flashing messages, 21-5518
 for matches, 2-2432
 magic, 20-5118
 musical, 12-2992
 of good luck, 2-2318
 paper, 1-250
 that draws voice-pictures, 20-5254
 that makes smoke-rings, 18-4718
 that makes a whirlwind, 5-1304
 see also Baseball
Boxer, dog in "Cricket on the Hearth," 2-2302
Boxer, ship, 12-3008
Box-furniture, of Miss Brigham, 2-2036; 2-2359; 10-2516; 11-2721
Box-kite, and aeroplane, 1-176
Boy, at the Giant's Castle, 3-726
 boys and the frogs, 9-2317
 breaking voice of, 19-4879
 dead boy who sang a hymn, 2-499
 games for boys, 15-3966; 19-5122
 life of Indian, 1-18
 on the burning deck, 14-3695
 painting of poet's boys, 7-1688
 remarkable swim of boy, 12-4090
 stronger than girls, 10-2472
 who cried Wolf, 13-3370
 who had no paper, 21-5478
 who kept himself awake, 21-5478
 who saved a crew, 14-3694
 who saved his family, 7-1744
 who took a man's place, 15-1020
 who would not fight against freedom, 2-334
 whom France forgot, 2-360
 with a goose, statue, 21-5539
 see also Blue Boy
Boyards, Russian nobles, 14-3724
Boyle, Robert, British scientist, 2-2161-62; 15-3984
 law of, 15-3984
Boyne, battle of the, 4-1041, 1043; 14-3766; 21-5556
"Boyne Water", song, 14-3766
"Boy of Winander", Wordsworth's, 7-1688
Boy Pioneers of America, boys' society, 23-6135
Boys' Corn Club, crop of, 2-2384
Boy-Scouts, of America, 23-6136
"Boz": see Dickens, Charles
Bossaris, Marcos, Greek patriot, 13-3239
Brabant, duchy of, 14-3544
Brabant, Duke of, in "Lohengrin," 21-5561
Brabant, dukes of, 14-3542
Brabantio, Shakespearean character, 2-443
Braccio, Roberto, Italian writer, 20-5315
Bracelet, bead, for doll, 2-2082
 used to crown Henry VI, 3-774
Bracket, making a fretwork, 20-5253
 of paper, 18-4825
Bracteoles, of flowers, 17-4353
Bracts, of a flower, 17-4560
Bracy, Maurice de, character in "Ivanhoe," 7-1666
Braddock, General (Edward), character in "The Virginians," 13-3420
 failure of, 3-559; 4-896; 24-6252
Bradford, Sir Edward, and tiger, 22-5802
Bradford, William, and Christmas day, 4-964
 governor of Plymouth, 2-526
Bradley, James, English astronomer, 7-1675, 1682
Bradshaw (John), regicide, 4-1040; 7-1866; 12-4686
Bradwardine, Baron of, in "Waverley," 6-1498
Bradwardine, Rose, in "Waverley," 6-1498, 1500
Brady, Nicholas, Psalm, version of, 2-2015
Bragg, General (Braxton), during Civil War, 2-2056
Braggiadocchio, character in "Faerie Queene," 3-699
Bragi, god of poetry, 14-3622
Brahm (John), a tenor, 14-3768
Brahe, Tycho, Danish astronomer, 7-1675, 1677
Brahman, and the goat, 23-6133
 and the pots, 23-6133
Brahmanism, religion, 12-3038

GENERAL INDEX

- Brahmaputra River**, in Asia, 15-3930
Brahman, kind of fowl, 6-1557; 18-4712
Brahmins, Indian caste, 6-1638; 7-1713; 16-4081
 see also Brahmanns
Brahms (Johannes), musician, 13-3288, 3294
Brain, 14-3597-98
 and alcohol, 17-4376; 21-5440
 and eye, 15-4021; 16-4263; 17-4427, 4523
 and the skull, 10-2569
 cells of, 18-4690
 centres of, 14-3689-92
 controls heart, 6-1597
 controls sight, 14-3570
 controls yawning, stretching, etc., 3-814
 development of, 18-4690
 during sleep, 13-3385-86
 food for, 5-1163; 11-2830
 growth of, 22-5722
 influence on digestion, 12-3179
 lacking in backboneless animals, 3-671
 memory and the, 18-4856
 mystery of the, 14-3687
 nerves of, 16-4117
 not affected by fish, 13-3275
 one-half lags behind, 22-5811
 parts of the, 15-3817
 poisoning the, 5-1162
 shape of, 17-4488
 site of, 10-2464, 2467-68
 size of, 18-4690
 sleep of the, 11-2733
 studies of, 18-4630
 swallowing-centre in, 8-2171
 tea and coffee, stimulants of, 13-3414
 thinking powers of, 6-1411, 1464
 work of, 21-5628
Brake, for electric elevator, 23-6199-6200
Bramante, Donato (D'A.), Italian architect, 5-1170; 19-5097, 5102
Bramble, and the fir-tree, 17-4316
 flower and fruit of, 16-4133-34
Bramble-bush, the heron and the cat, 11-2758
Brambling, a bird, 8-2112
Bran, husks of wheat, 5-1131; 11-2918
Branches, messages with, 9-2268
 sideways growth of, 15-3907
Brandeis, Louis D., Justice of Supreme Court, 24-6337-38
Brandenburg, elector of, 10-2558, 2560
 great elector, and Berlin, 11-2762
Brandenburg, Mark of, 10-2560
Brandenburg, province of, 10-2596
Brandenburg Gate, in Berlin, 11-2761-62
Brandon, Canadian city, 21-5610
 experimental farms near, 9-2275
Brands, with hot iron, 6-1438
Brandt, Margaret, character in "Cloister and the Hearth," 16-4070
Brandt, Peter, character in "Cloister and the Hearth," 16-4070
Brandy-bottle, a flower, 19-4946
Brandywine Creek, battle of, 4-1004
Bras d'Or, in Cape Breton, 21-5544
 see also Canada, railways and canals
Bras d'Or Lake, 21-5547
Brass, Sally, character in "Old Curiosity Shop," 11-2774
Brass, Sampson, character in "Old Curiosity Shop," 11-2774
Brass, alloy of copper and zinc, 7-1888; 10-2680
 for pens, 13-3484
 in ocean cables, 18-4698
 manufacture of, 10-2686
 utensils, etc., of, 6-1633
 why warm when rubbed, 10-2540
Braun, Ferdinand, and wireless, 17-4448
Bravida, Major, character in "Tartarin of Tarascon," 18-4642
Brazil, and Vesputius, 2-272
 animals of, 3-661, 683; 4-1075; see also America, South America
 birds of, 7-1757, 1764; 8-1976-78
 claimed by Portugal, 2-282
 gems from, 21-5370; 24-6379-80, 6382-83
 German settlements in, 11-2771
 history of, 12-3342, 3346; 16-4603, 4606, 4610; 20-5368, 5370
 Indians of, 17-4509
 insects of, 12-3447, 3453
 Jews in, 24-6388
 nuts of, 8-1998-99
 rosewood from, 19-5034
 rubber in, 22-5795
Brazil-nuts, growth of, 8-1998-99
Bread, aerated, 7-1890
 and salt, 14-3727
 as food, 11-2727; 21-5726
 by which we live, 11-2947
 called staff of life, 8-2085; 21-5726; 22-5991
 Canadian, 20-5300
 changing price of, 20-5178
 character in "Blue Bird," 22-5836
 crumb of, 9-2330
 how yeast raises, 12-3233
 made by machine, 5-1140-41
 of Sweden, 14-3657
 water in, 5-1193-94
 what raises, 4-909
 world's, 5-1131
Bread-winner, saving the, 23-6027
Breaker, of coal-mines, 4-838
Breakspear, Nicholas: see Adrian IV
Break-spectacles: see Cornflower
Bream, a fish, 10-2707
Breastbone, broken, 17-4383
 of man, 10-2468
Breast-plate, of high-priest, 24-6377
Breath, a deep, 3-814
 disposal of, 17-4486
 of all life, 4-914
 seeing our, 1-164
 why do I get out of? 5-1162
 why rises in air, 9-2248
Breathing, and the brain-bulb, 14-3689
 exercises in, 18-4829
 nerves that control, 14-3599
 process of, 6-1463; 7-1647, 1803; 22-5892; 24-6230-32, 6809
Breathing-centre, of brain, 7-1652; 18-4691
Breccia, a rock, 20-5350
Breckinridge, John C., lawyer, 8-2044
Breed's Hill, site of battle of Bunker Hill, 4-1000, 20-5395
Brehm (Alfred E.), German naturalist, 21-5505
Brehon Laws, of Ireland, 21-5551, 5554
Brehons, judges, of Ireland, 21-5551
Bremen, a free town, 10-2561, 2596; 11-2764, 2772
Bremen, ship, 22-5760
Bremerhaven, port of Bremen, 11-2772
Brennan, Louis, and gyroscope, 1-97
Brennus, attacked Rome, 14-3594
Brer Fox, in "Uncle Remus," 6-1483
Brer Rabbit, character in "Uncle Remus," 6-1483, 1621
Brescia, defence of, 1-138
Breslau, German port, 11-2766
Brest, naval port, 9-2423
Brethren, the Exclusive, 14-3732
Brethren of the Coast: see Boucaniers
Bretigny, Treaty of, 11-2816
Breton, Jules A., French painter, 10-frontis.
Breton, Cape, history of, 3-559
Brett, Jacob, and cable, 10-2494; 18-4697
Brett, John Watkins, cable of, 10-2494; 18-4697
Brewer, Ebenezer Cobham, poems: see Poetry Index
Brewster, Sir David, 9-2332; 23-6082
Brian Borohme, or Borna, king of Ireland, 21-5552
Brian, Prince, in Christmas Charade, 9-2265
Bribery, proposed by France, 6-1398
Bricklebit, in story, 7-1911
Brickmaking, in Asia, 19-4962
Bride, of the Forest, 5-1109
Bride, of the Wandering Prince, 5-1205
"Bride of Lammermoor", story of the novel, 6-1497
Bridge, arched, 9-2350
 at Cologne, 11-2763
 at Waldi Tori, 1-36
 bascule, over Chicago River, 22-5829
 bridges that led to Rome, 6-1402
 building of bridges, 1-28
 expansion of, 10-2653
 foot-bridges, 1-37
 Iwakimi, 1-37
 marble, at Peking, 1-36
 natural bridges, 14-3627
 of a ship, 18-4618
 of boats, 6-1631; 11-2763, 15-3859; 20-5148, 5150, 5153
 of concrete, 16-4244
 of musical instruments, 5-1089, 1092
 of New York City, 1-25
 of Siberian Railway, 15-3804
 of spools and bricks, 17-4386
 of the brain, 14-3687
 over Hawkesbury River, 1-33
 over St. Lawrence, 1-33

GENERAL INDEX

- Bridge**, over Zambesi, 1-24, 29
 swaying of, 13-4812
 to Asgard, 14-3652
 see also under names of individual bridges, as
 London Bridge, etc.
- Bridge-board**, a game, 10-2590
- Brigdenorth**, Major, in "Peveril of the Peak,"
 6-1497
- Bridge of Nations**, 18-4848, 4850
 see also Suez, Isthmus of
- Bridge of Sighs**, in Venice, 8-1166, 1170
- Bridge, Sapper's**, in Ottawa, 9-2272
- Brienne**, Napoleon at, 17-4359
- Brians Lake**, in Switzerland, 12-2982; 22-5844
- Brig**, a ship, 15-3960-61
- Brigantine**, a ship, 15-3960-61
- Brigham**, Louise, box-furniture of, 8-2035
- Bright**, Sir Charles T., and telegraph-cable,
 10-2487, 2494; 17-4445
- "Brighter Britain"**, see New Zealand
- Brightness**, of stars, 17-4482
- Brigade**, and Simpson tunnel, 24-6260, 6270
- Brill**, a fish, 10-2606; 15-3847-48
- Brimblecombe**, Jack, character in "Westward
 Ho!" 14-3716
- Brimblecombe**, Sir Vindex, character in "West-
 ward Ho!" 14-3714
- Brimstone**, is sulphur, 9-2244
- Brindley**, and Papin's engine, 10-2488
- Brine**, collecting salt from, pictures, 1-239, 240
- Brisbane**, Queensland city, 6-1372
- Brisquet**, children of, 20-5181
- Brisquette**, a mother, 20-5181
- Bristles**, of grass: see Awns, of grass
 of seeds, 16-4205
 same structure as hair, 1-166
- Britain**, dogs from, 24-6319
- Britannia**, figure on British coin, 14-3649
- Britannia Bridge**, 1-23
- Brithwood**, Lady Caroline, character in "John
 Halifax," 15-3971
- Brithwood**, Squire, character in "John Halifax,"
 15-3971
- British**, in Canada, 14-3732
- British Columbia**, education in, 21-5401
 forest of, 14-3733-34, 3737
 fox-farms in, 19-5078
 history of, 5-1280; 7-1842; 8-1918; 18-4834
 population of, 14-3731, 22-5912
 productions of, 23-6092, 6094
 province of, 1-232
 salmon fisheries of, 1-229, 233, 10-2703
 scenery of, 22-5777, 5783
 university in, 21-5402
 woman-suffrage in, 6-1454
 see also Canada, railways and canals
- British East Africa**, colony of, 16-4306
- "British Grenadiers"**, a song, 14-3768
- British Guiana**, belongs to British West Indies,
 23-6047
 boundary dispute, 13-3494
 colony of, 16-4603
- British Honduras**, belongs to British West
 Indies, 23-6047
- British Isles**: see Great Britain
- British Museum**, building of, 5-1255, 1258
- Brick**, and spoils, 17-4386
 blowing it over, 17-4495
 how to see through, 15-4046
 or pellet, made by ants, 11-2968
 puzzle about, 1-110
 use of, 3-607, 610
 writing on, 15-3909
- British North America Act**, and Canada, 5-1270,
 1276; 6-1451, 1454, 16-4324
- British Somaliland**, in Africa, 16-4308
- British Welcome League**, of Toronto, 22-5942
- Britomart**, Princess, character in "Faerie
 Queene," 3-696, 700
- Britons**, costume for, 20-5346
 driven into Wales, 7-1713
 dyed blue, 16-4132
 in Wales, 3-769
 settled in France, 9-2424
 story of, 1-208
- Brittany**, Duke of, 10-2508
- Brittany**, history of, 3-592; 10-2508; 11-2816
 province of France, 9-2419, 2423
 religious procession in, 10-frontis.
 settlement of, 9-2424
 woman of, 9-2419
- Brittleness**, cause of, 22-5891
- Brittles**, character in "Oliver Twist," 10-2565
- Brittle-star**, a marine animal, 9-2412
 development of, 14-3665
- "Broadhorn"**, a boat, 7-1835
- Broadtail**, a fur, 19-5078
- Broadway**, street in New York, 19-5010
- Broadway Bridge**, over Willamette, 8-2388
- Broddingnag**, country in "Gulliver's Travels,"
 5-1333
- Broca**, discoveries of, 15-3321
- Broccoli**, cultivation of, 13-3442
- Brook**, Sir Isaac, as governor of Canada, 5-1281
 Canadian commander, 6-1399; 23-6123
 during War of 1812, 3-759
- Brockton**, shoe factories at, 12-3103
- Brookville**, Canadian town, 23-6123
- Broke**, Sir Philip B. V., commander of the
 Shannon, 6-1398; 12-3008
- Broken Hill**, in Australia, 6-1374
- "Broken Jug"**, by Kleist, 13-3396
- Brome**, a grass, 5-1344, 1345-46
- Bromine**, liquid element, 5-1314; 12-2147
- Bronchitis**, of the lungs, 7-1650
- Bronchitis**, a disease, 7-1650
- Bronck**, Dutch settler, 19-5007
- Brontë**, Anne, English author, 10-2621, 2625
- Brontë**, Charlotte, English author, 10-2621, 2624
- Brontë**, Emily, English author, 10-2621, 2625
- Brontosaurus**, prehistoric animal, 1-14, 50, 54;
 23-5999, 6002
- Bronx**, borough of New York, 19-5007
- Bronx Park**, in New York, 19-5012
- Bronx Park Zoological Gardens**, rocking stone
 in, 1-14
- Bronze**, alloy of tin and copper, 7-1838
 for coins, 14-3646
 for cutlery, 18-4804
 for pins, 19-6001
 tools of, 1-16; 8-2067
 writing on, 13-3184
- Bronze**, Age of, in the world, 5-1816; 19-5001
- Brooke**, Lieutenant J. M., device for sea-sound-
 ing, 20-5175
- Brooke**, John, character in "Little Women,"
 20-5171
- Brooke**, Old, character in "Tom Brown's School-
 days," 16-4140
- Brooke**, Sir William O'S., and telegraph-wire,
 10-2494
- Brooklime**, a plant, 15-3893; 19-4954
- Brooklyn**, city of, 19-5007
 water-supply of, 20-5198
- Brooklyn Bridge**, 1-25, 30, 31
- Brooks**, Thomas, pictures of Shakespeare,
 21-5583, 5586
- Brook-trout**, game fish, 10-2701
- Broom**, a plant, 16-4135, 18-4659
- Broom**, and the English navy, 4-1041
 maldiservants and the, 8-2065
 of De Ruyter, 14-3548
- Broom-corn**, market for, 22-5713
- Broom-rape**, plants, 15-3892
- Broomstick**, of witch, 3-795
- Brotherly-Love**, a statue, 18-4674
- Brothers**, the Black, in story, 6-1534
- Brougham**, Lord, and Gibbon, 18-4730
- Browdie**, John, character in "Nicholas
 Nickleby," 10-2673
- Brown**, character in "Guy Mannering," 6-1627
- Brown**, Alice, American writer, 8-2101
- Brown**, F. C., poems: see Poetry Index
- Brown**, Ford Madox, paintings of, 7-1860,
 15-3934; 23-6039
- Brown**, George, Canadian orator, 5-1270; 16-4323
- Brown**, Henry Kirke, American sculptor, 18-4670
- Brown**, Jacob, during War of 1812, 3-759,
 6-1399
- Brown**, John, at Harper's Ferry, 8-2044; 13-3492
 song about, 12-3053
 Thoreau's defence of, 6-1618
- Brown**, Dr. John, comment of, 15-3822
- Brown**, Madam, character in "Tom Brown's
 Schooldays," 16-4137
- Brown**, Squire, character in "Tom Brown's
 Schooldays," 16-4137
- Brown**, Tom, character in "Tom Brown's
 Schooldays," 16-4137
- Brown**, color, 10-2696
 eyes of, 16-4330
 of bitten apple, 22-5723
- Browne**, Francis, Irish author, 4-1045; 6-1481
- Browne**, George, father of Mrs. Hemans, 22-5938
- Brownie**, and Olaf, 22-5909
 and the Farmer, 16-4238
 of Snaefell, 9-2403
- Browning**, Elizabeth B., English poet, 23-6038
 poems: see Poetry Index
- Browning**, John M., machine-gun of, 11-2712-13

GENERAL INDEX

- Browning, Robert**, English poet, 4-923; 18-4690; 19-4944; 23-6038
poems: see Poetry Index
- Brownlow**, character in "Oliver Twist," 10-2565
- Brownlow, E. B.**, poems: see Poetry Index
- Brown-tail Moth**, and a scarab, 13-3307
- Brown University**, in America, 17-4568
- Bruce, James**, explored Abyssinia, 2-298
- Bruce, Robert**: see Robert I
- Bruges**, city in Belgium, 14-3539
- Bruise**, treatment for, 13-3440; 17-4383
- Bramidi**, fresco of, 7-1686
- Branel, Isambard K.**, bridge and tunnel-builder, 1-50; 3-605; 10-2487; 2492
- Branel (Sir Marc Isambard)**, tunnel-builder, 1-57
- Brunelleschi, Filippo**, 11-2787; 2794
- Bruno, Giordano**, Italian astronomer, 7-1680; 8-1963; 10-2637; 19-5079
- Brush, George De Forest**, American painter, 18-4252
- Brush-turkey**, of Australia, 6-1366, 1563-64. 22-5752
- Brussels**, capital of Belgium, 9-2291; 14-3538, 3544, 3549
- Brussels-sprouts**, cultivation of, 12-2995; 13-3325
- Brutus**, Roman noble, 2-135, 437
- Brutus, Marcus**, killed Caesar, 2-442
- Bryan, Rebecca**, married Boone, 24-6252
- Bryan, William J.**, candidate for presidency, 9-2378; 13-3494
- Bryant, William C.**, American writer, 6-1609
memorial to, 10-5262
poems: see Poetry Index
statue of, 18-4675
- Bryn Mawr**, college for women, 17-1570
- Bryony**, black, 18-4659
- Buade, Louis de**, governor of New France, 3-558
- Bubbles**, and divers, 24-6311
bursting of gas, 12-3149
- Buccaneers**, of the Spanish Main, 17-4514
see also Boucaniers
- Buchanan, George**, and Montaigne, 20-5311
- Buchanan, James**, administration of, 13-3488, 3492
as president, 8-2043-44; 9-2382
- Bucharest**, capital of Rumania, 13-3240
- Buck-bean**, flowers of, 11-2884; 18-4136, 19-5084, 5086
- Bucket**, bung the, 5-1096
for fire, 22-5760
- Buckingham, George Villiers, First Duke of**, friend of Charles I, 7-1857
- Buckland, Dean**, and toads, 5-1216
- Buckland, Frank**, English naturalist, 6-1380; 7-1896
- Buckland, William**, English scientist, 4-868
- Buckwheat**, production of, in U. S., 9-2386
- Bud**, color of unopened, 17-4486
in bark, 20-5177
of palmetto, 21-5432
opening of flower, 18-4015
- Budapest**, capital of Hungary, 10-2594; 11-2896, 2899, 13-3244; 21-5651, 5654
- Buddeo**, and Mowgli, 21-5470
- Buddha**, fables of, 16-4285
founder of a religion, 7-1714; 12-3022-24
- Buddhism**, a religion, 7-1714; 12-3024; 15-3930
- Buddhists**, in British Empire, 18-4081
- Buen Aire**, island of, 23-6018
- Buenos Vista**, battle of, 7-1844-45
- Buenos Ayres**, capital of Argentina, 17-4512-13; 18-4609; 20-5361-63
revolution in, 20-5361
university of, in South America, 20-5362
- Buz**, blindman's, 10-2589
with a wand, 19-5035
- Buzelo, M. X.**, exposition at, 18-4675
- Buzelo, American**, 21-5609; 22-5301; 23-6144
as draft animal, 2-287, 295
attacks on man, 22-5807
described by Coronado, 2-276
hunting the, 7-1841
prehistoric, 1-14
skin for leather, 11-2834
skins for camouflage, 13-3509
see also Bison, Carabao
- Buzers**, for elevator, 23-6200
- Buzon (George L. L.)**, French naturalist, 2-376
- Buz-tip**, an insect, 12-3011
- Bug**, that resembles a hornet, 13-3453
- Bugle**, a plant, 17-4350
- Bugle**: see Beads
- Bugloss**, a plant, 18-4136; 17-4348
- Building**, what holds it up, 3-607
- Bulb**, of brain, 14-3599, 3686, 3689; 15-3817; 21-5673; 23-6107
of hair, 8-1982
of nerve, 14-3586
- Bulbs (of plants)**, cultivation of, 2-617; 6-1602; 7-1738, 1852
flowers from, 20-5230
grown in Holland, 14-3540, 3546, 3548
- Bulbuls**, birds, 8-2118
- Bulfinch, Charles**, architect, 20-5399
- Bulgaria**, costumes of, 13-3245
fruit in, 13-3242
history of, 12-3190; 13-3240, 3242, 3247
- Bulgarians**, in Canada, 14-8732
- Bulgars**, settled in the Balkans, 12-3186
- Bulkheads**, of a ship, 19-4630
- Bull, John**, doctor of music, 8-2352
- Bull, John**, poems: see Poetry Index
- Bull, Mrs.**, 9-2352
- Bull, Peg**, nickname for Scotland, 9-2352
- Bull**, a constellation 10-2648, 2645
and the Pleiades, 13-3374
- Bull**, and red, 11-2802
brazen-footed, 1-204
escape from, 22-5709
frogs and the bulls, 18-4866
Isabella and the, 10-2445
lion and the four bulls, 13-3504
of Crete, 13-3374, 20-5186
winged, 19-4958-59, 4961, 4964-65
- Bull**, of Pope: see Golden Bull, Pope, bull of
- Bullbat**: see Whip-poor-will
- Bullen**, Frank describes battle of whale and squid, 10-2484
- Buller, Charles**, secretary of Lord Durham, 5-1272
- Bullet**, in liquid air, 16-4085
- Bull-fight**, sport of Spain, 13-3345, 3348
Queen Isabella and the, 10-2445
- Bulfinch**, a bird, 7-face 1760; 8-2104, 2112
- Bull-head**, a fish, 10-2707, 2709
- Bullock, William**, and printing-press, 14-3615
- Bull Run**, battle of, 8-2047
second battle of, 8-2048
- Bull-trout**, a fish, 10-2704
- Bully**, in hockey, 19-5027-28
- Bulrush**, seeds of, 15-3895
see also Cat's-tail
- Bulwarks**, of a ship, 18-4618
- Bulwer-Lytton**: see Lytton, Edward G. E. L.
Bulwer
- Bumble**, character in "Oliver Twist," 10-2563
- Bumble-bee**, an insect, 11-2850; 12-3194
- "Bummers"**, of Sherman's army, 8-2055
- Bump**, bumps and the head, 10-2571; 14-3688, 17-4488
formation of, 22-5724
- Bumppo**, Nathaniel, a scout, 1-195
- Bunbury, Mr.**, character in "The Virginians," 13-3424
- Bunch-berry**, a plant, 12-3064, 3067
- Bundesrat**, German Upper House, 10-2600
see Germany, Bundesrat
- Bundy**, Edgar, his picture of an English sailor, 14-3712
- Bungalows**, African, 20-5322
- Bunker**, in golf-links, 12-3211
- Bunker Hill**, battle of, 4-1000; 21-5492
- Bunker Hill Monument**, in Boston, 20-5399; 22-5894
- Bunsby, John**, character in "Round the World," 19-4915
- Bunt**: see Baseball
- Buntings**, birds, 7-face 1760; 8-2104, 2111; 9-2345
see also Cow-bunting, Reed-bunting, etc.
- Bunyan, John**, English author, 4-1042; 5-1125; 7-1745; 14-3598
poems: see Poetry Index
- Bonaparte**: see Bonaparte
- Buoy**, acorn-cup as, 15-3900
- Burbank, Luther**, wonder-worker, 14-3660-61
- Burdock**, a weed, 18-4208-09
- Burgh**, meaning of, 2-466
- Burghley, Lord**, grew first English tobacco, 21-5411
- Burgh-upon-Sands**, and Edward I, 2-771
- Burglars**, and locks, 24-6358
their finger-marks, 7-1882
- Burg Miedock**, giant of, 21-5473
- Burgomaster**, and the inspector, 22-5743
- Burgos**, capital of Spain, 18-3345
- Burgoyne, General (John)**, expedition of, 4-1001, 1004-06
- Burgundians**, people of Burgundy, 10-2550

GENERAL INDEX

- Bargundy, Duchess of, and Charles V.** 11-2398
Bargundy, duchy of. 22-5350
Burgundy, Duke of, controlled Netherlands. 14-3542
 see also Charles the Bold
Burial, of Indians. 1-18
Burke, explored Australia. 2-368
Burke, Edmund, English philosopher. 10-2619; 16-4155, 4158-60; 18-4727, 4734
Burleigh (William Cecil), adviser of Queen Elizabeth. 4-860
Burley, in "Old Mortality." 7-1776
Burlington Beach, on Lake Ontario. 23-6122
Burma-Burial, and Tel-el-Amarna tablets. 18-4970
Burman, animals of. 4-1012
 empire of, 8-1930
 gems from, 24-6381
Burnap, made clocks. 6-1540
Burne-Jones, Sir Edward, English painter, his picture of King Arthur resting. 4-880; 23-6040
Burners, for gas-lights. 3-686-87
Burnett, Frances M., American writer. 8-2100
Burney, Dr. Charles. 10-2619; 16-4157
Burney, Fanny, English author. 10-2619, 2621
Burning, of dead. 6-1636
Burning-glass, use of. 14-3679; 16-4229, 4231
"Burning of Rome," picture, by Raphael. 19-5104
Burning of Troy: see Opal
Burns, James D., hymns of. 6-2018
 poems: see Poetry Index
Burns, Robert, poems: see Poetry Index
 portrait bust of, 18-4672
 Scottish poet, 4-1055; 6-1616; 23-6029, 6032
 silhouette of, 21-5641
Burns, clothing and. 15-3984
 dressing, 19-5032
Burnside, his fresco of Washington, etc. 7-1686
Burnside, General (Ambrose E.), during Civil War. 8-2050
Burnt-Cape, in Canada. 23-6124
Burr, Aaron, and Elizabeth Patterson. 19-4945
 and Hamilton, 10-2436, 2439
 as candidate, 13-3490
 character in "Man Without a Country," 21-5615
 vice-president, 6-1397
Burrard Inlet, near Vancouver. 22-5782
Bur-reed, an aquatic plant. 18-4949
Burkhus, Roman captain. 2-538
Burroughs, John, comments of. 5-1308-09; 11-2380
 extracts from, 12-3063
Burrow-duck: see Sheldrake
Burrowjack, a gnome. 9-2181; 14-3708
Burns, of weeds. 16-4208
Burton, Decimus, arch of. 19-5040
Burton Fort, the Doctor of. 2-476
Burying-beetle, work of. 13-3303, 3306-07
Bushy, Doctor, headmaster. 23-6029
Buses: see Omnibus
Bush, the, of Australia. 6-1375
Bushnell, David, and battle of the kegs. 12-3052
Bushnell, David, and submarine. 22-5857
Buskin, Venus: see Lady's slipper
Busoni, Abbe, character in "Count of Monte Cristo." 17-4431
Bussell, Grace, rescued on horse-back. 16-4089
Bust, what it is. 16-4171
Butcher-bird: see Shrike, a bird
Butcher's broom, a plant. 18-4654, 4657
Buthus, a scorpion. 13-3361
Butler, Reuben, minister in "Heart of Midlothian." 7-1773
Butler, cord acts as. 14-3598
Butter, as a food. 11-2829
Canova's lion of. 20-5383
 Dutch, 14-3546, 3548
 in Hungary, 13-3242
 in United States, 10-2678
 made by machine, 5-1143
 microbes that help make, 4-821, 908
 of Denmark, 14-3658
 source of, 5-1142
 world's, 5-1131-32, 1142-43
Butter-and-eggs: see Toad-flax
Buttercup family. 17-4353; 18-4758; 20-5228
Buttercups, flowers. 15-3815-16; 16-4134, 4210-11
Buttercups, and bees, a game. 14-3556
Butterfly, and flowers. 15-3814, 3816, 4015; 19-4956
 an invertebrate, 10-2463
 in clay, 23-6004
Butterfly, life of. 24-6371, 6375
 mimicry of, 12-3020; see also Leaf-butterflies
 needle-book shaped like, 19-5084
 shadow-picture, 20-5353
 tongue of, 8-2337
 various kinds of, 12-face 3011
Butterfly-orchids, of Britain. 17-4477-79
Butternut, tree of America. 8-1997; 20-5342-44
Butternut-brown, a dye. 20-5342
Butterscotch, recipe for. 1-255
Butter-tongue, a wood-witch. 3-2393
Butterwort, a plant. 19-5084
Butti, E. A., Italian writer. 20-5315
Button, a game. 4-966
Button, made from shoe-lace. 20-5351
 to sew on, 3-730
Buttonholes, to make. 21-5647
Button-hole-stitch, how to do. 3-621, 730
Buttonwood, a tree. 21-5432, 5437
 see also Plane-tree
Buz, a game. 1-253
Buzius, Serjeant, character in "Pickwick Papers." 10-2459
Buzzards, flesh-eating birds. 7-1893, 1896-99
By, meaning of. 2-470
By-path-Meadow, in "Pilgrim's Progress." 5-1183
Byron, George G., Lord, and the Greeks. 13-3240
 comments of, 12-2980; 14-3524; 22-5928
 English poet, 4-1055; 12-2980; 23-6035
 poems: see Poetry Index
Byron, John, poems: see Poetry Index
Byssus, a shell-fish. 10-2616
Byzantium, art of. 17-4589
 capital of Roman, or Eastern Empire, 2-542; 11-2940, 12-3074, 3186
 see also Constantinople
Byzantine Empire, Holy Land part of. 6-1549, 1551, 1554
- C**
- Cabbage, a plant.** 12-2995; 13-3325, 15-3903; 16-4132, 4134
 see also London Pride
Cabbage-butterflies. 12-3016, 3020-21
Cabbage-family, of plants. 18-4762
Cabbage-palm-tree, used for food. 21-5432-33
Cabinet, of Canada, Great Britain, etc. see Canada, Cabinet, etc.
Cabinets, Egyptian dressing. 18-4841, 4850
 made from cigar-boxes, 19-4924
Cabins, of boat. 18-4618
Cable, George W., American author. 6-1621
Cable, finding flaw in. 17-4588
 for suspension bridge, 1-25
 in Pacific, 6-1492
 submarine, 14-3577; 17-4445-46; 18-4697, 4698
 telephone, 2-340
Cable-operators, on Midway Island. 8-2156
Cable-ship. 18-700
Cabot, John, English explorer. 4-854; 24-6293
 reached America, 2-272, 279, 282; 3-553, 557
Cabot, Sebastian, and New World. 3-553
 English explorer, 4-854
Cabot, ship. 12-3004
Cabral, Pedro Alvarez, Portuguese navigator. 2-282; 20-5368
Cabs, the first. 23-6051
 see also Hansom-cab
Cacao, in Peru. 17-4510
 in West Indies, 23-6045-47
 raised in Philippines, 8-2151
 see also Cocoa, Chocolate
Cacao-tree, chocolate from. 9-2253
Cachalot, a whale. 4-1069, 1071-72
Caciques, of the Chibchas. 17-4506
Cackle, of hens. 23-6216
Cactus, designs suggested by. 18-4012
 plant, 14-3564, 3625; 15-4013; 22-5815-16
Cactus, a giant. 20-5186, 22-5775
Caddis-fly, an insect. 13-3301, 3305
Caderousse, Gaspar, character in "Count of Monte Cristo." 16-4316; 17-4431
Cadets, of West Point. 18-4735, 4738-40
Cadis, Spanish sea-port. 13-3348, 3348; 17-4514; 20-5200
Cadoudal, Georges, and Napoleon. 16-4284
Cady, Daniel, father of Elizabeth C. Stanton. 16-3721
Cady, Elizabeth: see Stanton, Elizabeth Cady
Cadmon, English poet. 2-469, 477
Cadwalles, Welsh leader. 22-5816
Caes, supplied stone. 3-590

GENERAL INDEX

- Cassianus (Andrea), Italian doctor,** 18-4631
- Cassar, Caius Julius, and Cleopatra,** 22-5786 and England, 1-210; 7-1713 and Florence, 11-2787 and London, 8-1254 and Paris, 21-5534 and the Jews, 24-6332 at Verulam, 22-5913 history of Gaul, 8-2067 July named for, 17-4634-35 Roman general, 2-434, 440; 10-2550; 20-5278 statue of, 22-5925-26
- Cassars, palace of,** 22-5924-28
- Cassina, a drug,** 13-3414
- Cage, in coal mine,** 4-833-34, 838 of cardboard and pins, 10-2522 spinning picture of, 21-5447
- Cagliari:** see Veronese, Paul
- Cagnetta, Cesarina, translator,** 19-4902
- Cair London:** see London, name of
- Cairo, Egyptian capital,** 16-4301-03; 23-6179 museum at, 18-4849
- Cairo, town in Illinois,** 23-6072
- Caissou, for lighthouse,** 1-26, 27
- Caius, John, founded college,** 18-4630
- Caius College, at Cambridge,** 18-4630
- Cajamarca, Inca's town,** 17-4512
- Cakes, for tea,** 13-3328 story of, 8-1131 story of King Alfred and, 2-468
- Calabria, Italian province,** 12-3074
- Calah, Assyrian city,** 19-4961, 4964
- Calais, and Queen Mary,** 22-5850 and Queen Philippa, 8-2072 history of, 3-772, 4-860; 8-2072, 21-5533 see also "Citizens of Calais," by Rodin
- Calceolarias, cultivation of,** 8-1363, 7-1853
- Calcium, compounds of,** 7-1697 in eggs, 13-3275 in milk, 11-2828 in quicklime, 17-4371 in spectrum, 11-face 2736, 2741 in stars, 8-1969 in sun, 8-2094; 13-5025 salts of, 6-1588, 11-2730, 2732
- Calcium bicarbonate, and chalk,** 20-5202 in hard water, 6-1583
- Calcium carbonate, as chalk or marble,** 7-1814, 1816; 10-2651 in marine animals, 9-2406
- Calcium chloride, in Dead Sea,** 22-5815
- Calcium sulphate, what it is,** 7-1816
- Calculating-machine, work of,** 22-5722
- Calcutta, Black Hole of,** 7-1718 factories at, 7-1716; 16-4078-79 Jain temple in, 9-2242 port of India, 6-1634
- Calderon, Frank, his picture of warriors and horses,** 23-6060
- Calderon (de la Barca, Pedro), play about Prince Fernando,** 15-4027
- Calèche, a carriage,** 1-224
- Calendar, reformed by Caesar,** 17-4535
- Calif, the golden,** 18-4850 skin for shoes, 12-3105
- Calgardup, district, caves of,** 21-5472
- Calgary, Canadian town,** 1-232; 9-2278, 21-5608, 5612-13; 22-5940
- Calhoun, John C., American statesman,** 10-2438, 2440 and California, 13-3492 and Nullification, 13-3491 as Senator, 9-2434 portrait bust of, 16-4668
- Callara:** see Veronese, Paul
- Calliban, Shakespearean character,** 2-329
- Callicut, and Vasco da Gama,** 1-65
- Callidote, Sir, character in "Fuerie (Queen),"** 3-697, 702
- California, admission of,** 7-1846; 8-2042; 10-2410; 13-3492 almonds of, 8-1997, 2004 birds of, 9-2340, 2343-44 climate of, 1-10; 9-2384 flowers of, 20-5235 fruit in, 3-649, 651-52; 9-2386; 10-2687, 13-3302; 15-3901; 22-5714 gems from, 24-6380-83 gold in, 7-1846; 10-2678; 20-5318, 5320; see also Gold heliographing in, 17-4441 hemp in, 15-4003 history, 7-1842, 1844, 1846
- California, irrigation in,** 21-5418 Mariposa grove, 4-915 mercury in, 10-2680 moving pictures in, 20-5140 ostrich-farms in, 6-1506 petroleum in, 10-2680; 16-4166 state flower of, 22-5815 trees of, 21-5432-33 view in, 22-5710 volcanoes in, 1-13
- California Kindergarten Training School, organization of,** 8-2102
- Californian, ship,** 14-3578
- California, University of, in Berkeley,** 17-4574
- Caligula, emperor of Rome,** 2-537; 19-5098 floating palace of, 22-5789
- Caliph, successors of Mohammed,** 15-3868; 16-4302 tombs of the, 23-6179
- Calisto, and Juno,** 13-3374
- Callao, port of Lima,** 18-4608
- "Callier Herrin," song,** 14-3770
- Calloway, Colonel, and Indians,** 24-6253
- Calloway, Fanny and Betsy, and Indians,** 24-6253
- Calmar, Union of, and Scandinavia,** 14-3654, 3658
- Calopogon, an orchid,** 12-3063
- Calorie, unit of heat,** 17-4502; 23-5996
- Calorimeter, measures heat,** 17-4501, 4502
- Calvert, George, and America,** 2-527-28
- Calves, lessons of,** 21-5665
- Calvin, John, French reformer,** 6-1593; 10-2556 teachings of, 14-3544
- Calvinists, a sect,** 10-2556
- Calypto borealis, an orchid,** 11-2885
- Calyx, development of,** 16-4205 of flowers, 5-1249; 16-4134
- Camberwell, part of London,** 19-4944
- Cambium, layers of bark,** 22-5896
- Cambridge, England, college at,** 3-776, 4-855; 18-4630 press at, 14-3612
- Cambridge, Mass., settlement of,** 2-532 Washington at, 4-1000
- Cambridge Chimes, Handel's,** 6-1538
- Cambyse, king of Persia, reign of,** 20-5146 character in "Egyptian Princess," 23-5951
- Camden, William, and Jonson,** 21-5489
- Camel, age of,** 9-2350 foot of, 14-3368 in Egypt, 23-6183 in India, 6-1631 of the deserts, 2-287, 291; 23-6098, 6101, 6104-05 prehistoric, 1-13 shadow picture of, 20-5353 use of, 2-284; 15-3858, 3861 young of, 21-5665
- Cameos, and sardonyx,** 24-6381
- Camera, for moving pictures,** 20-5136, 5138 photography without, 11-2719 takes pictures, 1-45, 47 used out-of-doors, 15-4287
- Camillo, Shakespearean character,** 3-562
- Camillus, Marcus Furius, Roman commander,** 2-436; 14-3594
- Camouflage, what it is,** 13-3508
- Campania, Italian province,** 12-3074
- Campanile, of St. Mark's,** 5-1167, 1169-70 see also Tower, Giotto's
- Campanulas, or bell-flowers,** 8-2039; 18-1658
- Campbell, Sir Colin, in Indian mutiny,** 7-1720
- Campbell, Bob Roy McGregor, character in "Rob Roy,"** 6-1623
- Campbell, Thomas, poems:** see Poetry Index song writer, 14-3765-66
- Campbell, Vice-Admiral, and press-gang,** 15-4026
- Campbell, Willie, in Alaska,** 8-2149
- Camp-Fire Girls, an organization,** 14-3751
- Camphor, and moths,** 16-4117 for fireship, 15-3901 in celluloid, 19-4875 in water, 22-5741
- Campion, Edmund, gave life for religion,** 19-5093
- Campion, a plant,** 15-4013-14; 16-4135; 18-4758
- Camp Lascar, for mosquito research,** 12-3236
- Canaanites, Asiatic people,** 19-4960
- Canada, and glaciers,** 1-14 and John Q. Adams, 7-1838 animals in, 1-160, 222; 2-412, 510; 3-676, 678, 680, 683; 8-1918 as an English colony, 3-755

GENERAL INDEX

- Canada, as a nation, 5-1271**
 baseball in, 20-5247
 birds of, 7-1640, 1646; 8-1918; 13-3455
 boundary of, 13-3491
 branch of British mint in, 14-3645
 British flag in, 1-231
 cabinets of, 6-1452, 1457
 canals in, 5-1272, 1280; 9-2273, 2278
 census of, 14-3731
 climate of, 21-5607
 councillors of, 6-1452, 1457
 councils of, 3-756, 758-59; 6-1452, 1454, 1457
 days celebrated by, 17-4463
 dominion of, 1-224; 5-1270, 1276
 during American Revolution, 4-1000
 during War of 1812, 6-1398
 emblem of, 10-2499; 20-5337
 explorers of, 2-274-76
 fisheries of, 15-3841, 3953
 fishermen from, 10-2602
 flowers of, 12-3063
 French in, 2-533; 3-553; 20-5295
 French republic proposed, 3-759
 fruit in, 3-649
 furs from, 4-994; 18-4831, 4833; 19-5072
 government of, 5-1272, 1274, 1276, 1280
 governor-general of, 1-226, 5-1281, 6-1452, 1456
 harvests of, 13-3354
 history of, 5-1113-14, 1278; 16-4079
 hockey in, 19-5027
 House of Commons of, 6-1452
 how it is governed, 6-1451
 immigration into, 22-5941
 in summer and winter, 1-227
 Indians of, 1-21; 11-2781
 land rising in, 1-13
 laws in, 3-756, 758
 legislative assemblies of, 3-759, 6-1454, 1457
 lieutenant-governor, 6-1457
 lost by France, 3-2076
 meaning of name, 3-554
 mineral resources of, 23-6091
 mounted police of, 18-4621
 natural wealth of, picture, 1-229
 New West of, 21-5607
 Parliament of, 3-758; 5-1276, 1280, 6-1452, 1454
 peaches in, 3-649
 population of, 14-3732
 prime-minister of, 6-1452
 provincial governments, 6-1454, 1457
 provincial legislatures, 6-1454
 railways of, 1-34; 5-1272, 1280; 9-2273
 rebellions of, 3-759, 5-1278
 Senate of, 6-1452
 settlers in, 3-756, 758
 seventy-two resolutions of, 5-1270, 1276
 spirit of, 24-6345
 sports of, 20-5221-22
 taxes, 3-756
 territorial commissioners, 6-1457
 time belts of: see America, time belts of
 tories in, 6-1390
 united province of, 5-1272
 unknown, 8-1915
 wheat in, 5-1132-33; 9-2386; 11-2947; 21-5608
 winter sports of, 20-5224; 21-5406
 wonderland of, 1-223
 see also Canadians, Rebellion, Riel, War of 1812, etc.
- Canada, Book of:** see Tables of Contents
'Canada for the Canadians,' slogan of, 5-1280; 16-4324
Canada-jay: see Jays, Birds, and Whiskey-Jack
Canadian Northern Pacific Railway, in Canada, 9-2276
Canadian Northern Railway, in Canada, 9-2276-77
Canadian Pacific Railway, in Canada, 1-34, 226, 231; 5-1280; 9-2276-77; 12-4624; 21-5608
Canadians, well-known, 16-4323
'Canadians of Old,' by Roberts, 16-4327
Canal-boats, traveling on, 18-4764
Canals, Darius' Canal, 20-5148
Duke of Bridgewater's Canal, 5-1116
 in Germany, 11-2762
 Julian's Canal, 20-5155
 of Babylon, 19-4963
 of France, 9-2418
 of Low Countries, 14-3539-40
 of Mars, 9-2388, 2392; 13-3512
 of the ear, 7-1886; 15-3912, 3915, 3917
 semi-circular, 15-3998, 4000
- Canals, use of, 10-2688**
 see also Arizona Canal, Panama Canal, Suez Canal, etc.
Canal Zone, on Isthmus of Panama, 5-2147, 2159-60; 17-4406; 21-5594
Canaries, birds, 2-2104, 2106, 2112; 9-2350; 16-4213
 puzzle of, 1-110
Canary Islands, fruits in, 3-656
Cancale, oyster farms at, 15-3853-54
Cancelling-machine: see Post-office, work of
Cancer-root: see Beech-drops
Candies, how to make, 1-255
Candle, and mirror, 22-5724
 and weight of box, 22-5871
 apple and, 22-5923
 bay-berry, 20-5219
 blowing out, 14-3681; 22-5919
 burning of, 4-852, 917
 early use of, 3-662-65, 668
 for telling time, 6-1537, 1541
 grease for ice-bergs, 18-4705-06
 problem concerning, 3-736
 spermaceti, 4-1069, 1071
 used in ceremony, 3-596
 see also Tallow-dip
Candle-race, for swimmers, 11-2726
Candlestick, from glass of water, 23-6168
 of paper, 18-1825
Candle-wicks, of cotton, 4-1042
Candy, chocolate, 9-2257
 how to make, 5-1251; 9-2256-58, 14-3552, 3558
Candytuft, a plant, 5-1098
Cane, for weaving, 8-2138
 sugar: see Sugar-cane
Canines, kind of teeth, 8-2078-79
Canmore, Malcolm, 12-3133
Cannae, battle of, 20-5278
Cannibals, of Oceania, 6-1491
Canning, Sir Samuel, laid Atlantic cable, 10-2496
Canning-industry, in Canada, 15-3954
Cannon, at battle of Cressy, 3-772
 leather, 11-2833
 toy, 15-3902
Cannon-ball, bouncing on water, 22-5896
 irresistible, 9-2354
 Jules Verne's story of, 4-1056
 kept from falling, 20-5173
 shot to the moon, 16-4115
Cance, Indian, 1-20; 5-1107; 15-4057; 20-5328, 5340
Cance-race, for hand paddlers, 11-2726
Canopus, a star, 17-4482
Canossa, and penance of Henry IV of Germany, 18-4795-96
Canova, Antonio, Italian sculptor, 16-4174; 19-5097, 5108; 20-5381
 tomb of, 19-5043
Cans, flower-pots made from, 7-1736
Canso, strait of, in Nova Scotia, 21-5544
Can't, meaning of, 16-4094
Cantabrian Mountains, in Iberian Peninsula, 13-3338, 3340
Cantaloupes, see Melons, Musk
Canterbury, pilgrimages to, 2-466, 492-93, 3-592, 15-3938
 see also Cathedral, Canterbury
Canterbury, province of New Zealand, 6-1190
Canterbury, Archbishop of, execution of, 19-5094
 of England, 18-4791-92, 4796-97
 see also Laud, William
Canterbury-bells, cultivation of, 3-732, 7-1738; 13-3326, 16-4136
Canterbury Cathedral, in England, 3-592, 773, 15-4796
Canterbury, Monastery of, history, 12-4792
Canterbury Plain, in New Zealand, 6-1486, 1490
"Canterbury Tales," by Chaucer, 2-493; 15-3934, 3937
Cantharellus: see Chantarelle
Cantharver, a type of bridge, 1-25, 33
 see also Bridges, building of
Canto, meaning of, 16-4094
Canton, John, a schoolmaster, 3-2161, 2166
Cantons, of Switzerland, 1-130; 12-2986
Canute, king of England, 2-472; 3-590
Canute, mighty king of Denmark, 14-2654
Canvas, picture on, 21-5648
Canvas-backs, a duck, 6-1564
Capotehouse, a kind of rubber, 22-5792
Cap, ducal, and Tell, 7-1703
 of Liberty, 16-4106
 of mast, 13-4619-20
 polar caps, of Mars, 15-3388

GENERAL INDEX

- Cap**, that the fairies wear, 9-2231
- Cape Breton**, canals of, 9-2278
history of, 3-553
wireless station at, 14-3584
- Cape Breton Island**, history, 1-224; 2-272; 4-895, 898
in Nova Scotia, 21-5543
scenery of, 21-5547
- Cape Colony**, gems from, 24-6379
history of, 2-302; 5-1115, 1120; 6-1368; see also South Africa
observatory in, 10-2640
reptile bones found in, 14-3663
- Capella**, a star, 10-2639, 2643, 2645; 11-2911
- Cape Fear River**, settlement on, 2-531
- Cape of Good Hope**, see Cape Colony
- Cape Otway Mountains**, 6-1376
- Cape-petrel**, see Cape-pigeon
- Cape-pigeon**, a bird, 7-1640-41
- Capercaillie**, 6-1559, 1562
- Capet, House of**, French dynasty, 8-2070
- Capet, Hugh**, see Hugh Capet
- Capet, Louis**, see Louis XVI, of France
- Cape Verde Islands**, see Line of Demarcation
- Capillaries**, blood-vessels, 6-1593-98, 16-4201; 18-4616; 19-4880; 23-6109
discovered, 18-4631
of the lungs, 7-1650
- Capillarity**, and fluids, 19-4877
- Capitals**, letters, 11-2922; 12-3168
- Capitol**, at Washington, 7-1685, 1692; 10-2435; 17-4582
burned, 6-1399
picture of, 7-1687
whisper in dome of, 15-4021
- Capitol**, of Rome, 20-5271-74
- Capitol**, the Pennsylvania, 16-4174
- Capitoline Hill**, in Rome, 14-3594; 20-5272, 5274
- Capitoline Museum**, portraits in, 22-5926
- Capring**, and chalcid fly, 13-3302
- Capstan**, of a ship, 18-4620
- Capsule**, a fruit, 16-4212; 17-4352
- Captain**, a brave ferry, 7-1821
- "Captains Courageous"**, by Kipling, 20-5373
- Captives**, Indian torture of, 1-21
- Capulet Family**, Shakespearian characters, 2-447
- Capybara**, a rodent, 3-679, 681
- Car**, of Juggernaut, 6-1636
on Capitol clock, 7-1686
- Carabao**, buffalo of Philippines, 8-2153
- Carabas, Marquis of**, 5-1145
- Carabus ulens**, an insect, 12-3194
- Caracalla**, baths of, 20-5270
- Caracaras**, South American hawks, 7-1900-01
- Caracas**, capital of Venezuela, 18-4609
- Caractacus**, British chief, 1-210, 211
- Caracul**, a fur, 19-5078
- Caramels**, vanilla, 14-3552
- Carat**, a unit of weight, 24-6378
- Caravans**, and desert traffic, 15-3858, 3862; 16-4300, 4308; 23-6101, 6105
- Caraway**, a flowering plant, 16-4136
- Carbohydrates**, compounds, 7-1890, 11-2730
digestion of, 9-2365
for foods, 11-2730
- Carbolic acid**, as antiseptic, 24-6365
- Carbon**, and breathing, 1-244; 2-283
and diamond, 24-6380
and gas-making, 2-418
and oxygen, 19-5025
burned, 4-918; 14-3776
charcoal is, 9-2244
chemistry of, compounds, 7-1887-88
coal is, 10-2538; 14-3569, 19-4878
color of glowing, 22-5892
consumed by body, 11-2727
element, 4-853; 8-1313
forms of, 18-4814
graphite is, 13-3484; 15-4024
in alcohol, 22-5992
in blood, 6-1430; 24-6309
in celluloid, 19-4875
in comets and meteors, 10-2545
in electric light, 8-688
in food, 12-5099
in iron, 22-5697-99
in kerosene, 16-4110
in living creatures, 15-3908
in marsh-gas, 14-3569
in oils, 13-3384
in protoplasm, 5-1197
in smoke, 17-4369
in stars, 8-1969; 11-2741
- Carbon**, in steel, 5-1316; 14-3685; 22-5690, 5697-99
in sugar, 3-704; 13-3287; 22-5991
in sun, 19-5025
volatilized, 12-3147
- Carbonates**, for soils, 13-3353
salts of carbonic acid, 7-1814
- Carbon-dioxide**, a compound, 13-3384
a gas, 3-706; 4-918; 5-1313-14; 6-1584
and carbonates of lime, 20-5292
and flame, 9-2248
and marsh-gas, 7-1889
as plant-food, 11-2799; 12-3127; 13-3350; 18-4815
diffusion of, 12-3144
effects of, 10-2654; 11-2918
effervesces, 7-1817
food for plants, 7-1789; 11-2909; 13-3514; 15-3906; 16-4111
formed by yeast, 12-3233
given out by fish, 14-3781
heaviness of, 23-5991
in air, 5-1246; 8-2084; 17-4588; 22-5890
in blood, 6-1462; 7-1647, 1652, 1817
in brains, 18-4813
in bread-making, 3-706; 5-1131; 7-1890; 23-5993
in breath, 5-1161; 7-1803; 9-2248-49; 17-4486; 19-5020; 22-5892, 24-6306, 6308, 6310
in cave, 7-1803
in sea-weed, 19-5020
in smoke, 12-3234; 17-4269
produced by burning, 16-4110; 19-5025
solid, 16-4086
taste of, 7-1813
see also Carbonic-acid Gas
- Carbonear**, town in Newfoundland, 24-6296
- Carbonic-acid gas**, 1-244; 2-283; see also Carbon-dioxide
in blood, 16-4201
in gunpowder, 9-2244
- Carbon-monoxide**, color of flame of, 22-5892
in gas-making, 2-418
see also Gas, illuminating
- Carbon-oil**, see Petroleum
- Carbuncles**, or garnets, 24-6379
- Carburettor**, in gas-making, 2-418
- Carcassonne**, French city, 9-2422; 14-3772
- Carden, Captain**, commander of Macedonian, 12-3007
- Cardif Castle**, Duke Robert in, 6-1551
- Cardinal**, Canadian town, 23-6123
- Cardinal**, a bird, 8-2109, 2114; 9-2345; 22-5746
- Cardinal-flower**, a plant, 12-3068; 19-5092
- Carding-machine**, for cotton, 19-4888
for ropes, 15-4009
- Cards**, geometrical drawing card, 21-5446
identifying selected, 16-4293
problem of horseshoe, 18-4707, 4830
puzzling, 10-2583
stamp-tax on, 4-995
that tell number, 22-5738
thought-reading by, 9-2270
tricks with, 1-254; 11-2806
- Carax**, see Sedges
- Caray, Lady Elizabeth**, poems: see Poetry Index
- Carey, Henry**, poems: see Poetry Index
song-writer, 14-3765, 3769, 3771
- Cargo**, problem concerning a, 4-941
- Caribbean Sea**, salt on shore, 1-238
- Caribou**, a deer, 2-412; 8-1915
- Caribou Bridge**, over Fraser River, 22-5781
- Caribou Mountains**, in Canada, 22-5778
- Caribs**, in West Indies, 9-1930; 17-4506; 23-6041-43
- Carinthia**, and Austria, 11-2896
- Carisbrooke Castle**, prison of Charles I, 4-1039
7-1859
- Carker, James**, character in "Dombey & Son," 10-2567
- Carleton, Sir Guy**, governor of Quebec, 3-755
- Carlina**, a flower, 6-1519
- Carlisle Castle**, in "Waverley," 6-1500
- Carlotta**, Empress of Mexico, madness of, 17-4402
- Carlstrom, Victor**, flight of, 1-182
- Carlton House**, portico of, 6-1262
- Carlyle, Thomas**, anagram from, 19-5037, 5183
and Emerson, 6-1613
comments of, 11-2914; 14-3765
picture by Whistler, 16-4248
Scotch author, 16-4154-55, 4162; 18-4734; 20-5312
- Carman, Bliss**, Canadian author, 21-5407

GENERAL INDEX

- "Carmen," by Bizet, 13-3294
 Carmencita, Spanish dancer, 16-4253
 Carnae, monument of, 8-2067
 Carnarvon Castle, in, 3-770
 Carnatic, district in India, 6-1632; 7-1718-20
 Carnatic, ship in "Round the World," 19-4915
 Carnation, a plant, 5-1249; 15-3903; 16-4135;
 20-5223, 5232; 22-5815-16
 Carnegie, Andrew, built Palace of Peace, 24-6298
 Carniola, and Austria, 11-2896
 Carnival, in New Orleans, 23-5960
 Carnot (Lazare H.), and French Revolution,
 16-4099; 17-4360
 Carolana, province of: see Carolina
 Carolina, early history of province, 2-531
 grant to, 4-595
 settlers in, 7-1832
 Carolina-wren, song of, 9-2346
 Caroline, good deed of, 4-1065
 Caroline, queen of England, in "Heart of Mid-
 lothian," 7-1773
 Caroline, queen of England, was refused
 coronation, 18-4688
 Caroline Islands, German possessions, 11-2771
 Carp, fish, 10-2700, 2705-06
 see also Gold-fish
 Caracciolo, Vittore, Italian artist, 5-frontis., 1176
 Carpathia, ship, 14-3578
 Carpathians, mountains of Europe, 21-5651, 5657
 Carpels, of flower or fruit, 16-4134
 Carpenter, in "Canterbury Tales," 15-3939
 Carpenter-bee, an insect, 11-2850
 Carpenter-moth: see Goat-moth
 Carpentry, rustic, 17-4381
 Carpet, Asiatic trade in carpets, 15-3927-28
 faded by sun, 17-4586
 how the ladies cut, 5-1299, 1364
 of life in sea, 2-376
 stains on, 21-5644
 the magic, 7-1710
 woven in India, 6-1633
 "Carpetbaggers," of the Reconstruction Period,
 8-2037
 Carpet-moth, destructive, 12-3020
 Carposapsa pomonella: see Codlin-moth
 Carranza, General Venustiano, president of
 Mexico, 17-4404
 Carrara, marble of, 12-3085
 Carrel, Dr. Alexis, scientist, 24-6369
 Carriages, manufacture, in U. S., 10-2686
 - of railways, 3-598
 that measured roads, 15-3800
 Carrick-bend: see Knots
 Carriers, pigeons, 9-2219
 Carrington, Yates, picture, dogs and collie,
 21-5511
 Carrion-crow, as scavenger, 7-face 1760
 1901-02; 9-2342
 Carroll, Dr. James, and yellow fever, 12-3235-36
 Carroll, Lewis, poems; see Poetry Index
 wrote "Alice in Wonderland," 11-2953
 see also Dodgson, Charles
 Carrot, a food-plant, 12-2995, 3217; 16-4136;
 17-4387
 flower of wild, 15-3816, 4016; 16-4204, 4210
 Carrot family, 17-4353
 Carrousel, Place du, in Paris, 21-5536
 Carry, for drowning persons, 5-1362
 Carstone, Richard, character in "Bleak House,"
 10-2460
 Cartagena, Spanish city, 13-3343
 Carter family, education of, 4-962
 Carteret, Sir George, proprietor of New Jer-
 sey, 2-529
 Carthage, aqueducts of, 12-3127
 legendary history, 1-78
 story of, 2-436; 26-5200, 5272, 5274-76;
 22-5707
 Cartier, Sir George H., Canadian lawyer, 16-4323
 Cartier, Jacques, comment on Indians, 11-2782
 exploration of, 1-223; 2-275; 3-553, 557
 Carriage, in sharks, 10-2478
 is gristle, 16-2465; 13-4001
 of body, 24-6354
 of skeleton, 10-2465
 of spines, 10-2471
 Carton, Sydney, character in "Tale of Two
 Cities," 10-2461
 Cartoons, of Raphael, 2-762
 Cartouch, of Egyptian kings, 13-4846
 Carta, of Sicily, 12-3085
 Cartwright, Dr. Edmund, and machines, 15-4008
 Carver, Governor John, 2-526
 Cary, Alice, American writer, 2-2095-96
 Cary, Jennie, sang "Maryland," 12-3054
 Cary, Phoebe, American writer, 2-2095-96
 poems: see Poetry Index
 Cary, Will, character in "Westward Ho!"
 14-3710
 Cary Sisters, poets, 12-3054
 "Casablanca," by Hemans, 22-5336
 Casablanca, Giacomo J., story of, 14-3396
 Cascade Range: see also Coast Range
 Cascades, rapids, 23-6123
 Case, for gloves and handkerchiefs, 5-1256
 for night-dress, 20-5255
 for silks, 23-6166
 see also Caddis-fly
 Case, of words, 9-2228
 Cashaw: see Mesquite
 Cashmere, king who came to, 11-2759
 Casia, respected by Justinian, 12-3189
 Cask, and the woman, 15-3879
 Caspian Sea, animals in, 4-1075
 between Europe and Asia, 12-3032; 14-3721,
 3726; 15-3855, 3882, 3924
 level of, 12-3126, 3128
 origin of, 15-3933
 Cassatt, Mary, American painter, 16-4252, 4255
 Cassava, a plant, 17-4506
 Cassim, a Persian, 1-201
 Cassine: see Yaupon
 Cassio, Shakespearean character, 2-443
 Cassiopeia, a constellation, 10-2640-41, 2643, 2645
 Cassiopeia, legend of, 13-3373
 Cassites, Asiatic people, 13-4960, 4962
 Cassowary, a bird, 6-1504, 1506-08
 Caste, among Hindoos, 6-1636
 Castiglioni, fresco of, 7-1686
 Castile, history of, 11-2816; 13-3240
 Castile, New, province of, 13-3329
 Castile, Old, province of Spain, 13-3329
 Castle, brazen, 3-697-98
 doubting, 5-1184, 1186
 enchanted, 3-579; 7-1709
 in the air, 5-1148
 in sand, 15-4039-41; 19-5121
 Lords of the Grey and White Castles, 7-1903
 Princess of the Ivory, 8-2062
 "Castle by the Sea," by Uhland, 13-3306
 "Castle Dangerous," story of, 8-1496
 Castle Geyser, in Yellowstone Park, 3-585-86
 Castle Joyous, in "Faerie Queene," 3-701
 "Castle Rackrent," by Edgeworth, 10-2621
 Castlewood, in Thackeray's novels, 13-3309, 3419
 Castlewood, Lady, character in "Henry
 Esmond," 13-3309
 Castlewood, Viscount, character in "Henry
 Esmond," 13-3309
 Castlewood House, in "The Virginians," 13-3420
 Castor, a star, 10-2642, 2645
 Castra, Roman fire-house, 22-5755
 Castriot, Georges, Albanian patriot, 1-132
 Casts, of fossils, 11-2918
 of Pompeian bodies, 23-6222
 Caswallon, British chief, 22-5913
 Cat, affected by high pitch, 19-4872
 age of, 9-2350
 and bad weather, 8-2034
 and lion, 23-6133
 and mice, 17-4246
 and valerian, 19-4951
 arch of back, 22-5889
 as fur-animal, 19-5074
 belling the, 2-504
 character in "Blue Bird," 22-5836
 communications of, 21-5507
 Dick Whittington's, 2-396
 drawing with coins, 14-3554
 enemy to other animals, 3-804
 falls on its feet, 6-1587
 family of, 1-166
 heron and the bramble bush, 11-2758
 how to make rag, 3-620
 King of the Cats, 11-2758
 purring of, 5-1161
 sees in the dark, 1-163
 skull of, 10-2573
 tears of, 20-5397
 the eagle and the sow, 13-4867
 various kinds of, 2-510, 512-13
 see also Tibert, Sir, White Cat, etc.
 Catcombs, in "Ben Hur," 20-5261
 under Rome, 3-634; 22-5923, 5931
 Catalogues, anagram from, 19-5037, 5133
 Catalonia, province of Spain, 13-3329
 Catalpa, a tree, 21-5437-38
 Cataract, of the eye, 16-4334

GENERAL INDEX

- Catbird**, a kind of wren, 9-2346; 13-3459, 3462
Catch-ball, a game, 8-1603
Catchfly, a plant, 16-4135
Cateran, in "Waverley," 6-1499
Caterpillars, Blue Caterpillar, 11-2962; 12-3089
 destroyed by orioles, 13-3455
 fungus growing, 15-3894
 injurious, 12-3203
 killed by insect-larvæ, 13-3299-3300
 of butterfly and moth, 12-3011-21
 of silk-worm moth, 7-1823
 protective devices, 13-3449, 3451, 3453-54
 turn into butterflies, 16-4277
Catesby, friend of Guy Fawkes, 7-1807
Catfish, as food, 10-2709
Catgut, made from sheep, 2-410
Catharina, heroic Countess of Schwarzburg, 20-5239
Catharine, Princess of Württemberg, married Jerome Bonaparte, 19-4944
Cathcart, Earl, governor of Canada, 5-1274
"Cathedral", group of trees, 1-235
Cathedrals, building the, 16-4173
Cathedral Square, in Florence, 11-2795
Catherine, St., story of, 4-1026-27
Catherine, a fishing-boat, 20-5372
Catherine, character in "Cloister and the Hearth," 16-4069
Catherine, queen of England, 21-5591
Catherine I., czarina of Russia, 14-3726
Catherine II, the Great, empress of Russia, built Hermitage, 15-3800
 reign of, 14-3766
Catherine, of Aragon, history of, 4-856, 858, 860; 13-3342
Catherine, of Braganza, and Bombay, 6-1631
Catherine, of Medicis, builder of Louvre, 21-5535
Catherine, of Siena, 22-5933
Catherine the Great, see Catherine II
Catherine-wheel, name of, 4-1026
Catholic Emancipation Bill, in "John Halifax," 15-3974
Catkins, of trees, etc., 11-2877; 13-3258, 3262-63, 3267-69
Cato, Marcus F., Roman philosopher, 2-438, 20-5278
Catspaw, see Germander-Speedwell
Catchheads, of ships, 18-4619
Catkill Mountains, and Rip Van Winkle, 18-4780
 water from, 20-5193
Catpaw, in a rope, 13-3326
Cattail, a grass, 12-3061
Cattail, a plant, 19-4950, 4952, 5092
Cattaro, Austrian port, 11-2901; 13-3244
Cattaro, Gulf of, in Europe, 11-2901
Cattle, as money, 17-4374
 disease in, 24-6364, 6366, 6368
 Egyptian, 18-4853
 fossil, 11-2919
 in Africa, 16-4306
 in America, 1-15
 in Argentina, 20-5365
 in Australia, 16-4081
 in Canada, 6-1277
 in Holland, 14-3546, 3548
 in Queensland, 6-1367, 1372
 in Russia, 15-3797, 3803-04
 in Switzerland, 12-3992
 in Tibet, 15-3930
 molasses fed to, 3-704
 of Bedouins, 23-6098
 of Geryon, 20-5186
 of Hungary, 21-5658
 seaweed as food for, 19-4921
 skins for leather, 10-2686; 12-3105
 various kinds of, 2-404, 408
 wild, in India, 6-1631
 see also Bison, Buffalo, Carabao, Stockyards, etc.
Cattle-food, and microbes, 4-906
Cattlemen, catch condors with noose, 7-1897
Cattle-ranches, in United States, 10-2677
Cattle-tick, damage of, 13-3364, 24-6368
Caucasus, hero of the, 12-3001
Caucasus Mountains, in Russia, 14-3728, 15-3802, 3856
Cauliflowers, sowing, 12-2995
Causation, meaning of, 20-5290
Cautic Soda, see Potash
Cavalcanti, character in "Count of Monte Cristo," 17-4435
Cavaliers, in America, 2-533
 in Civil War, 7-1858, 1864-65
 in "Feveril of the Peak," 6-1497
Cavalry, drill, at West Point, 18-4739
Cave (Edward), a publisher, 18-4726
Cave-bear, fossil, 11-2919
Cave canem, origin of phrase, 23-6222
Cave-dwellers, homes of, 3-610; 14-3627
Cavelier, Roberts see La Salle
Caveman, of Africa, 23-6000
 prehistoric, 1-206; 20-5330
Cavendish, Henry, English scientist, 8-2166
Cavendish, Victor C. W. see Devonshire, Duke of
Caves, enchanted, 8-1095
 first homes, 24-6342
 from Virginia, 20-5332
 near Mentone, 11-2735
 of Australia, 6-1377; 21-5471
 painting in, 13-3480; 20-5330
 stone-iceles in, 8-432
 see also Bats, Dobsona, cave of, Dragon's Cave, Fish, Mammoth Cave, etc
Caviare, sturgeon-roe, 10-2601, 2603
Cavour, Count di, Italian statesman, 12-3086; 21-5416
Cavy, see Guinea-pig
Cawnpore, massacre of, 5-1119; 7-1720
Caxton (William), English printer, 3-776; 4-855
 581; 14-3610, 3613; 15-3938, 3940-41
Cayenne, see French Guiana
Cayugas, Indian tribe, 1-21
"Cease Firing", by Johnston, 8-2101
Cecil (Robert), English statesman, 7-1808
Cecilia, St., story of, 4-1030
Cedar, a tree, 14-3733-35; 21-5429, 5436
 frost on, 19-4939-40
 of Lebanon, 14-3749
 use of wood, 20-5352
Cedar-bird, or waxwing, 13-3462
Cedric, of Rotherwood, character in "Ivanhoe," 7-1663
Ceiling, colors on the, 10-2588
 of the Sistine Chapel, 19-5101, 5103-04
Celano, a Pielade, 13-3374
Celandine, a plant, 11-2884; 16-4134
Celery, cultivation of, 12-3217, 14-3786; 16-4136, 17-4387
Celestine V, story of, 2-502
Celia, Shakespearian character, 3-637
Cellar-beetle, value of, 13-3303
Cellini, Benvenuto, and the salamander, 8-1215
 Italian artist, 16-4173; 19-5097, 5099, 5106; 22-5853
Cellini, Giovanni, father of Benvenuto, 22-5853
Cells, and growth, 10-2470
 as lenses, 16-4260
 electric, 5-1100
 living, 4-818-19, 1020; 5-1195
 of bones, 10-2465
 of honey-comb, 11-2852, 2855, 2857
 of lung, 7-1650; 24-6307
 of skin, 8-1923, 1981
 Voltaic, 8-2167
 see also Blood, cells of, Nerves
Celluloid, catches fire, 13-4875
 for film, 20-5136
 for handles, 18-4805
Cellulose, and celluloid 13-4875
 what it is, 4-1020; 5-1195
Cell-wall: see Cells
Celts, and Franks, 10-2550
 in Great Britain, 2-477
 in Iberian Peninsula, 12-3338
 in Ireland, 21-5551
 of Switzerland, 12-2984
Cement, of rubber, 22-5795
 Portland, 24-6351
Cenis, Mont, tunnel under, 9-2416
Censitaire, French term, 20-5301
Censor, office of press, 14-3614
Censor, Roman official, 2-438
 see Cato, Marcus P.
Censorship, of the press, 14-3614
Census, of Augustus, 22-5933
 of Canada: see Canada, census of reports of, 10-2686
Census, U. S. Department, in charge of, 6-1437
Centaur, Chiron, 1-208
Centaury, a plant, 16-4186; 17-4475, 4480
Centennial Exposition, at Philadelphia, 13-3493, 16-4221
Centigrade, meaning of, 8-1937
 see also Scale, Centigrade
Centimetre, unit of length, 14-3673
Centipedes, value of, 13-3355, 3357
Central, of telephone, 2-336, 339

GENERAL INDEX

- Central America, and the Monroe Doctrine,** 13-3491
 animals in, 2-414; 5-1211; 17-4406
 archaeology of, 20-5327
 birds of, 7-1757, 1898; 8-1978
 countries of, 17-4397
 fruit in, 3-650; 17-4406
 history of, 4-900
 insects of, 13-3298
 mahogany from, 19-5034
 map of, 17-4399
 prairies of, 10-2615
 rubber in, 22-5795
- Central America, Republic of the U. S. of,**
 dissolution of, 17-4406
- Central Park, in New York, 19-5012, 5014, 5018**
 statues of, 13-3308
- Central Powers, during the Great War, 13-3247**
- Centre: see Football**
- Centres: see Brain, Gravity, etc.**
- Centrifugal, used in salt-making, 1-238**
- "Century of Dishonor," by Jackson, 8-2100**
- Cerberus, legend of, 13-3373**
- Cerberus, dog of Hell, 13-3374; 20-5186**
- Cerdie, Saxon chief of Wessex, 16-4077**
- Cereals, are grasses, 8-2085**
 as food, 11-2948
 cookery of, 10-2578
- Cerebellum, little brain, 14-3599, 3686-87**
- Cerebrum, new brain, 14-3686-87**
- Ceres, a little planet, 9-2392**
- Cerf, se mirant dans l'eau, 18-4854**
- Cerocoma Schaefferi, 12-3194**
- Cerro de Pasco, market at, 18-4605, 4611**
- Cerro Gordo, battle of, 7-1844**
- Cervantes (Seavedra, Miguel de), Spanish author, 4-801; 13-3344, 20-5307, 5311**
- Cervera (y Topete, Pascual), Spanish admiral, 8-2154**
- Ceryneian Mountain, stag of, 20-5185**
- Cetiosaurus, extinct reptile, 1-54**
- Cette, French city, 9-2428**
- Cettinje, capital of Montenegro, 12-3238, 13-3244**
- Centa, history of, 15-4027; 16-4308**
- Cevennes, mountains, 9-2416**
- Ceylon, animals in, 2-292; 3-802**
 birds of, 6-1557
 butterflies in, 12-3020
 coil-rope in, 15-4005
 fish of, 10-2708
 gems from, 24-6379-81
 history, 23-6047
 insects of, 13-3298, 3447-50
 rubber grown in, 14-3569; 22-5792, 5795, 5798-99
 tea in, 23-5971, 5974, 5979
- Chad, Lake, in Africa, 16-4308**
- Chadwick, John White, poems: see Poetry Index**
- Chamroes, battle of, 20-5209**
- Chaffer-beetles: see Cockchafer, Rose-chaffer, etc.**
- Chaffinch, a bird, 8-2104, 2111; 22-5746**
- Chagres River, and Panama Canal, 21-5594**
- Chagres Valley, dam across, 21-5592**
- Chain, dance-figure: see dances**
- Chain, stiffened by motion, 13-3436**
- Chain-viper, poisonous serpent, 6-1386**
- Chair, coronation, 3-770**
 French coronation, 11-2766
 rustic, 17-4381
 seventeenth and eighteenth century, 23-6176
 that comes to you, 10-2515
 see also Sedan-chairs
- Chaise, a vehicle, 23-6056**
- Chalcid-flies, value of, 13-3300-02**
- Chaldeans, part of Mesopotamia, 19-4960**
- Chaldeans, and astronomy, 7-1675; 10-2637**
- Châlet, toy, 18-4704-05**
- Chaleurs, Bay of, in Canada, 1-224; 3-554; 21-5546**
- Chalgrove Field, battle of, 7-1864**
- Chalk, a kind of rock, 3-429; 11-2918-19; 12-3023; 20-5292, 5349; 22-5388**
 composed of shells, 3-2405
 is calcium carbonate, 7-1814, 1816
 making of, 10-2651
 oxygen in, 9-2244
 turned into soil, 13-3349
 use of, 1-267
 see also Calcium
- Châlons, battle of, 9-2347; 10-3550; 15-3926**
- Chalus, siege of Castle of, 8-2019**
- Chamber, the golden, 7-1709**
- Chamber of Commerce, in New York, 19-5010**
- Chameleon, a lizard, 5-1211, 1213, 1219**
 changes color, 10-2473
- Chamois, an antelope, 2-411, 413**
 shadow-picture, 20-5353
 skins for leather, 11-3834
- Chamomile, drug-plant, 17-4472-73**
- Chamounix, glacier at, 10-2531**
- Champagne, La, district of France, 9-2420**
- Champions, Olympic, statues to, 18-4173**
- Champlain, Samuel de, and Five Nations, 4-894**
 and the Green Mountains, 7-1831
 explored America, 2-275-76; 3-555-56
 founded Quebec, 2-278; 4-892
 statue of, 1-222
 surrenders Canada, 3-557
- Champlain, Lake, battles of, 4-896**
 discovery of, 2-278; 3-556
- Champollion, Jean François, and hieroglyphics, 13-3482**
- Champs Elysées, in Paris, 21-5538**
- Chancas, Indian tribe, 17-4508**
- Chancel, invented first match, 3-811**
- Chancellor (Richard), traded with Russia, 4-859; 21-5456**
- Chancellorsville, battle of, 2-2045, 2050**
- Chancery, Court of, in "Black House," 10-2459**
- Chandeller, of Frederick Barbarossa, 11-2766**
- Chanbarnagore, French at, 7-1716**
- Chandi, Indian doll, 13-face 3434, 3439**
- Chang, character in Chinese story, 2-359**
- Change, constancy of, 12-3047**
- Changes, always going on, 7-1887**
 see also Color, Cycles, of Nature
- Channing, children, 8-2099**
- Chant, Gregorian, 18-4790**
 meaning of, 16-4094
- Chantrelle, a mushroom, 19-face 4882**
- Chanticleer, a cock, 2-494**
- Chantrey (Sir Francis L.), English sculptor, 18-4174**
- Chanute, Octave, used gliders, 1-174**
- "Chapel," by Uhlard, 13-3396**
- Chapel decorated with mosaics, 12-3083**
 Norman, in Tower, 3-590
 the Spanish, 11-2793
 see also Henry VII, Chapel of, Sistine Chapel
- Chapel Hill, university at, 17-4568; 23-5958**
- Chapels of the Seven Tongues, in cathedral, 19-5016**
- Chapin, Deacon: see Puritan, statue**
- Chapin, James F., American naturalist, 4-101**
- Chapman, Frank, on seed-eating birds, 9-2345**
- Chapultepec, battle of, 7-1844**
 Mexico, history of, 17-4402
 palace of, 17-4403
- Character Game, to play, 17-4384**
 answers to, 17-4500
- Characters, Cuneiform: see Writing, cuneiform**
- Charades, Christmas, 9-2265**
 game of, 17-4385; 21-5451, 5523
- Charcoal, for iron-industry, 22-5688**
 from alder, 13-3262
 from hazel, 8-1997
 in gunpowder, 9-2344
 in iron-making, 22-5687
 used in electric lighting, 3-667
 what it is, 5-1313
- Charing Cross, in London, 3-770**
- Chariot, knives on, 20-5147**
 of spoils, 17-4386
 ruins of Roman, 10-2475
- Chariot, Arthur's: see Great Bear**
- Chariot-race, in days of Ben Hur, 20-5256**
- Charity, character in "Faerie Queene," 3-698**
 character in "Martin Chuzzlewit," 10-2673
 character in "Pilgrim's Progress," 5-1129
- Charity School, costume for girl, 20-5346**
- Charlecote, Shakespeare and, 21-5580**
- Charlemagne, and Aix-la-Chapelle, 11-2766**
 and church of Rome, 10-2552
 and Hungary, 11-2898
 and Moors, 13-3340
 and Netherlands, 14-3542
 and Northmen, 14-3652
 emperor of Holy Roman Empire, 8-2068, 2071; 12-2986, 3076, 3078, 3082
 established East Mark, 11-2896
 founded Hamburg, 11-2760
 statue of, 20-5378; 21-5534
 stories about, 15-3936
 treaty with Harun al Raschid, 15-3860
- Charles, and balloon, 22-5810**
- Charles I, emperor of Austria, 11-2895, 2904, 2906; 21-5652 5654**

GENERAL INDEX

- Charles IV**, Holy Roman Emperor, 11-2902
Charles V, Holy Roman Emperor, and Catharina the Heroic, 20-5239
 and Mexico, 17-4898-99
 and Netherlands, 14-3544; 22-5850
 and pirates, 18-4307
 and Pizarro, 9-2222
 and Rome, 12-3082
 and Titian, 3-762; 5-1175
 forks for, 18-4801
 gave Austria to Ferdinand, 11-2898
 physician to, 18-4630
 reign of, 2-554; 10-2555-56; 22-5849
Charles VI, Holy Roman Emperor, and Pragmatic Sanction, 11-2904
 death of, 17-4553
Charles VII, Holy Roman Emperor, chosen, 17-4554
Charles X, king of Denmark, 14-3660
Charles I, king of England, and cabs, 23-6052
 and covenant, 21-5625
 and Great Rebellion, 7-1857-66
 and Ireland, 21-5556
 and New World, 2-528, 531; 3-556
 and Oliver Cromwell, 2-523
 and Van Dyck, 17-4591
 children of, 7-1856
 incidents of reign, 4-1034, 1036
 in Scott's stories, 6-1497
 letters of, 15-3880
 Milton, on execution of, 22-5676
 monuments to, 19-5047
 portrait by Van Dyke, 3-764
 puzzle-picture, 4-930
 statue of, 4-1039
Charles II, king of England, and American colonies, 2-528, 531
 and Bombay, 6-1834; 7-1716; 16-4078
 and cabs, 23-6052
 and Covenanters, 21-5625, 5628
 and Dutch Wars, 14-3547
 and Episcopacy, 7-1773
 and fur-trade, 18-4832
 and Marvell, 18-4599
 and Milton, 22-5678
 and Quakers, 22-5934
 and religious persecution, 7-1747
 as little boy, 7-1856
 in "Woodstock," 6-1497
 incidents in reign of, 4-1038-39, 1041; 5-1258
 revenge on Cromwell's body, 18-4686-87
 theatre in time of, 23-6029
Charles III, the Simple, king of France, 8-2068
Charles V, king of France, 11-2816
Charles VII, king of France, 8-2072
Charles IX, king of France, 8-2072
Charles X, king of France, 9-2289, 16-4106
Charles, king of Rumania, 13-3240
Charles I, king of Spain: see Charles V, Holy Roman Emperor
Charles IX, king of Sweden, 14-3660
Charles XI, king of Sweden, 14-3658
Charles XII, king of Sweden, 14-3656, 3660, 3724
Charles XIV, king of Sweden, 14-3656-57
Charles Martel, duke of Austrasia, 8-2068, 13-3339
Charles, the Bold, Duke of Burgundy, 12-2988, 14-3544
Charles the Great: see Charlemagne
Charles Doggett, ship, 21-5494
"Charles O'Malley", by Lever, 12-2975
Charles River, a boundary, 2-526
Charleston, S. C., college in, 17-4570
 during Civil War, 8-2052
 during Revolution, 4-998, 1008, 6-1389
 early history, 6-1392
 fire in, 22-5757
 forts of, 21-5432
 naval battle of, 4-1002
 prison-vessels of, 3-784
 sea-port of South Carolina, 23-5958, 5963
 settlement at, 2-531
Charlie, problems concerning, 3-738
Charlock, a weed, 18-4211-12
Charlois, Countess of, character in "Cloister and the Hearth," 18-4070
Charlotte, character in "Oliver Twist," 10-2564
Charlotte, city in North Carolina, 23-5958
Charlotte Amalie, town of, 8-2146, 2157-58; 23-6048
Charlottesville, in Virginia, 17-4569; 23-5957
Charlottetown, capital of Prince Edward Island, 21-5546
Charming, King, in story, 12-3280
Charter, the Great: see Magna Carta
Charters, forged, 18-4681
Chartley, wild cattle at, 2-405
Chartres, cathedral of, 16-4178
Charybdis, a whirlpool, 18-4811
 story of, 1-76
Chase (Salmon P.), Secretary of the Treasury 8-2040
Chase, William M., American painter, 16-425: portrait by Sargent, 18-4252, 4255
Chassis, frame of a motor-car, 17-4460-61
Chateau Clique, in Lower Canada, 3-759
Chateau d'I, in "Count of Monte Cristo," 16-4317
Chateau Frontenac, a hotel, 1-222; 5-1278
Chateaugay, defeat of, 3-759
Chateau Laurier, hotel in Ottawa, 9-2272
Chattanooga, battle of, 3-789; 8-2080
 city in Tennessee, 23-5962, 5969
Chatte, et le Perroquet, 16-4972
Chatterers, birds, 7-1763-64
Chaucer, Geoffrey, English poet, 1-102; 2-477, 493; 3-773; 9-2237; 15-3934, 3936, 3940-42
Chaudiere River, in Canada, 23-6124
Chauliac, Guy de, Papal physician, 18-4630
Chavez, flight of, 1-177
Chebec, a bird, 13-3457
Checkerberry: see Wintergreen
Checkers, how to play, 17-4497
Check-rein, cruelly used, 1-169
Chick-punches, of monkeys, 8-2173
Cheserbyle, Frank, character in "Nicholas Nickleby," 10-2672
Cheserbyle Brothers, characters in "Nicholas Nickleby," 10-2671
"Cheer, boys, cheer, Sebastopol is taken," song 14-3768
Cheese, and fools of Gotham, 16-4126
 in Holland, 14-3546, 3548
 in Hungary, 13-3242
 in Switzerland, 12-2992
 in the United States, 10-2678
 microbes that make, 4-821, 906
 nutritious, 11-2829
 sold by France, 8-1182
Cheesebox, table made from, 18-4707
"Cheesebox on a raft": see Monitor, ship
Cheetah, for hunting, 1-156, 160, 24-6242
Chelinus, a fish, 10-face 2600
Chelifer, a false scorpion, 13-3361
Chelly, Cañon de, Pueblo village in, 1-19
Chelsea, Eng., history of, 4-858
 More's house at, 5-1330
Chelsea Hospital, in London, 5-1258
Chemise, doll's, 3-621
Chemistry, building up life, 16-4116
 meaning of, 7-1693
 of all life, 7-1887
 of soils, 13-3353
 of stars, 11-2740
 science of, 4-853, 868; 8-1960
 see also Carbon compounds, Compounds, making of
Chemists, of Jack's House: see Jack, house of
Chenab Canal, in India, 21-5416
Cheops: see Khu-fu
Chepman, Walter, a printer, 14-3612
Charbourg, French port, 9-2423
 mussels used for breakwater, 16-2616
Cherokees, tribe of Indians, 1-21
Cherry, Andrew, song-writer, 14-3768
Cherry, European wild, 14-3527
 flower of, 18-4133-34
 in story, 5-1204
 stolen by blackbird, 8-2113
 stones of, and birds, 17-4376
 where grown, 3-649, 660
 wild, 17-4560-61
 see also Charity
Cherry-bird: see Cedar-bird
Cherry-gall, cause of, 10-2475
"Cherry Nips," song, 14-3771
Cherry-tree, and Japanese, 22-5775
Cherubs, painted by Sir Joshua Reynolds, 6-frontis.
Chesapeake, ship, 1-222; 8-1398; 12-3068
Cheshire Cat, character in "Alice in Wonderland," 12-3090
Chessmen, made of Tangrams, 16-4193
Chest, of the body, 6-1594; 16-4200; 21-5622; 24-8310
Chest, woman hidden in, 14-3767-69
Chester, Edward, character in "Barnaby Rudge," 11-2778

GENERAL INDEX

- Chester, John**, character in "Barnaby Rudge," 11-2778
- Chester, Eng.**, houses at, 21-5630
- Chesterfield, Lord, and Johnson**, 18-4729
- Chestnut**, a tree, 11-2878; 20-5341, 5345
- Burbank's**, 14-3566
- European or Spanish**, 14-3744
- uses of**, 8-1998, 2002
- Chest-protector**, in baseball, 20-5249
- Chestodon**, a fish, 10-face 2600
- Cheval**, et l'âne, 18-4798
- Cheviots**, hills in Great Britain, 2-472; 3-592
- Chevre, Paul**, his statue of Champlain, 1-222
- Chevre, et le Renard**, 21-5532
- Chevreau, et le loup**, 18-4854
- Chew**, rescued miners, 22-5708
- Chewing**, necessity for, 8-2172
- Chewing-gum**, from crude oil, 16-4169
- Cheyennes**, Indian tribe, 1-21
- Cheyne, Harvey**, character in "Captains Courageous," 20-5373
- Chibcha country**, of Colombia, 18-4604
- Chibchas**, Indian tribe, 17-4506, 4512
- Chicago**, exposition in, 9-2378; 18-4875
- fire in**, 22-5757
- history of**, 22-5825; 23-6118
- population of**, 9-2384
- scenes in**, 22-5828-29
- site of**, 3-553
- stock-yards**, 10-2679, 2684
- world's fair in**, 9-2378; 11-2803; 13-3494; 22-5826
- Chicago Drainage Canal**, 22-5826
- Chicago, Milwaukee and St. Paul Railway**, and electric power, 2-314-15
- Chicago River**, and Drainage Canal, 22-5826
- explored**, 2-278
- Chicago, University of**, in Illinois, 17-4570, 22-5850
- Chichimecos**, natives of Mexico, 17-4400
- Chick**, wing of, 3-675
- Chickadees**, birds, 9-2220, 2346; 12-3155; 22-5751
- Chickamauga**, battle of, 8-2050-51
- Chickasaws**, Indian tribe, 1-21
- Chicken-hawks**: see Hawks, Canadian
- Chickens**, in America, 1-16
- Mother Carey's**: see Mother Carey's Chickens, Petrels
- Pharaoh's**, 7-1896
- young**, 8-1556
- Chickenstalker, Mrs. Anne**, character in "The Chimes," 9-2301
- Chickering, James**, piano of, 5-1088
- Chickweed**, a plant, 15-3890; 16-4135, 4212-13
- Chicory**, a plant, 15-4016; 16-4132, 4136, 4206-07
- problem concerning**, 2-491
- Chiefs**, Indian, 1-17
- Chieftains**, of a vanishing race, 24-frontis.
- Chien**, et l'âne, 18-4798
- Chilblains**, cause of, 8-2083
- Child, Mrs. Lydia Maria**, poems: see Poetry Index
- Child**, of long ago, 1-frontis.
- Child Charity**, story, 4-1045
- "Child Harold's Pilgrimage,"** by Byron, 23-6035
- Childeric**, captured Paris, 9-2348
- Childhood**, and poets, 4-923
- Children**, adopted by Indians, 10-2576
- and alcohol**, 21-5440
- and government**, 24-6388
- and John Founds**, 15-3824
- cure of**, 18-4627
- education for**, 14-3692; 18-4748; 20-5306
- foods for**, 13-3274, 3413
- friend of**: see Mann, Horace
- Holy Child**, 17-4536
- immigrants to Canada**, 22-5946
- in Natural History Museum**, 20-5331
- instincts of**, 20-5188
- liable to chilblains**, 8-2083
- life in Colonial days**, 4-959
- life of German**, 11-2767
- massacre of**: see Cawnpore, massacre of
- New York's care of**, 12-3219
- of Holland**, 14-3543
- of Indians**, 10-2578; 14-3628
- poet of**, 22-5938
- rate of breathing**, 7-1651
- saved the town**, 4-923
- spirit of the child**, in "The Chimes," 9-2301
- things not good for**, 18-4879
- thinking of**, 8-1413
- voice of**, 16-4095
- Children**, waiting to be born, characters in: "Blue Bird," 22-5840
- waking of a child**, 13-4021
- will rule**, 11-8907
- Children-of-the-Sky**: see Forget-me-not
- "Children's Album,"** by Schumann, 18-1293
- Children's Friend**: see Shaftesbury, Lord
- Child Roland**, legend of, 12-5119
- "Child's First Grief,"** by Hemans, 22-5939
- "Child's Garden of Verses,"** by Stevenson, 9-2329
- Child-singer**, sculpture of, 13-frontis.
- Child-Welfare Exhibit**, box furniture at, 8-3034
- Chile**, Germans in, 11-2771
- history of**, 13-3342; 17-4514; 20-5364
- natives of**, 17-4513
- navy of**, 20-5367
- rain in**, 22-5874
- Republic of**, 18-4606, 4608
- Chillingham Castle**, wild cattle at, 2-405
- Chillon**, Castle of, 12-2980
- Chilodactyle**, a fish, 10-face 2600
- Chimera**, a fish, 10-2479-80
- Chimera**, imaginary monster, 1-218; 10-2479-80
- "Chimes,"** by Dickens, 9-2298; 10-2459
- Chimneys**, and fires, 22-5762
- fires in**, 12-3113
- for lamp**, 3-669
- open for ventilation**, 7-1804
- use of lamp**, 20-5292
- use of tall**, 12-3234
- wind sings down the**, 21-5474
- Chimney-sweep**, the porcelain, 18-4679
- Chimney-swift**, a bird, 13-3461
- Chimpanzee**, an ape, 3-625-28; 12-3130; 24-6245
- China**, Emperor of, character in story, 22-5772
- China (country)**, and astronomy, 7-1675
- and mushrooms**, 19-4882
- and paper**, 13-3484
- and Russia**, 14-3729
- animals of**, 3-806
- binding feet in**, 15-4020
- birds of**, 6-1559-60, 1566; 9-2215-16
- bird's-nests eaten in**, 9-2215-16
- bowls in**, 5-1263
- coal in**, 10-2680
- costume of Empress**, 1-face 112
- cotton in**, 19-4885
- fishes of**, 10-2706-09
- flowers of**, 20-5237
- fruits in**, 3-650
- Germany in**, 11-2771
- girls in**, 4-923
- glass of**, 5-1263
- Great Wall of**, 1-125
- history of**, 1-60; 15-3928
- Kafir corn in**, 23-5968
- killing babies in**, 20-5190
- lapis-lazuli**, 24-6383
- map of**, 1-115
- marine animals food of**, 9-2412
- milk not used in**, 2-406
- plague in**, 11-2801
- possessions of**, 15-3924
- pottery of**, 17-4540
- religions of**, 12-3026
- reptiles of**, 5-1213
- shoes of**, 12-3112
- silkworm eggs stolen from**, 7-1829
- tea in**, 23-5971-72, 5974, 5979
- war with England**, 8-2018
- China (ware)**, made in France, 9-2420
- mending**, 16-4294
- see also Dresden china**
- China-aster**, a plant, 20-5238
- Chinaman**, who saved his mistress, 7-1744
- Chinch-bug**, destroys grain, 12-3205
- Chinchilla**, fur-bearing animal, 3-682-83; 19-5072-77
- Chinese**, and astrologer, 8-1960
- and gunpowder**, 5-1164
- and Philippines**, 8-2152
- and silk**, 7-1823
- and sugar**, 3-708
- and tea**, 13-6414; 17-4585
- eat shark-fins**, 10-2480
- in Canada**, 22-5942, 5948
- in Hawaii**, 8-2150
- oyster farms of**, 10-2618
- stories from**, 21-5478; 23-6028
- use chop-sticks**, 18-4801
- writing of**, 12-3484
- Chingachgook**, Indian sagamore, 1-195
- Chinook**, a fish, 10-2708
- Chinook-winds**, of Canada, 21-5608
- Chinquapin**, a nut, 8-1598

GENERAL INDEX

- Chipmunk**, and cherries, 17-4560
 stripes of, 5-1110
 winter sleep of, 24-6376
- Chippendale** (Thomas), cabinet-maker, 23-6171, 6177
- Chippewa**, a warrior, 5-1107
- Chippewa**, battle of, 3-759; 6-1399
- Chippewa Bay**, of the St. Lawrence, 23-6123
- Chippewas**, Indian tribe, 11-2785
- Chippy**, a bird, 13-3460
- Chiron**, a centaur, 1-203
- Chisel**, how to use, 2-384
- Chivalry**, Order of, in "Table Round," 4-884
 see also Arthur, Prince
- Chlorine**, compounds of, 7-1813, 1889
 for water, 6-2116
 gaseous element, 1-237; 5-1314; 15-4017
 in milk, 11-2828
- Chloris**, spirit of the flowers, 12-3210
- Chloroform**, an anæsthetic, 18-4633, 4691
 and sleep, 12-3228
 effects of, 4-1021
 making, 7-1889
- Chlorophyll**, changes of, 20-5292
 in plants, 16-4114
 in insects, 13-3450
 in sea-vegetation, 19-4876
 makes proteids, 11-2731
 utilizes carbon dioxide, 11-2909
- Chocolate**, eggs of, 13-3324
 food-value of, 13-3416
 how to remove, 2-488
 manufacture of, 9-2256, 2258
 stick of, 9-2253
 Swiss, 12-2992
- Chocolate-creams**, making, 14-3552
- Choctaws**, Indian tribe, 1-21
- Chokeberry**, a plant, 19-5088, 5090
- Choke-cherry**, a fruit, 17-4560; 20-5342
- Choking**, cause of, 24-6307
 how to remedy, 7-1649
- Cholera**, microbes of, 4-821
 of poultry, 24-6364
 temples to, 6-1382
- Cholos**, mixed race, 18-4611
- Chomedei**, Paul de; see Maisonneuve, Sieur de
- Chopin**, Frederic, musical composer, 13-3285, 3292
- Chord**, in music, 10-2652; 19-4905; 22-5872
- Choregos**, prize winner, 19-5040
- Chosroes**, Sassanian king, 20-5155
- Chosroes II**, king of Persia, 15-3858
- Christ**, and his disciples; see "Tribute Money"
 and Nicodemus, painting by La Farge, 16-4221
 and St. Christopher, 4-1023
 and the banner of the Resurrection, by Fra Angelico, 15-4036
 birth of, 2-535-36
 First Church of, 12-3122
 period of, 24-6332
- Christabel**, by Coleridge, 23-6034
- Christ-child**, and chrysanthemums, 7-1705
- Christchurch**, city in New Zealand, 6-1490
- Christchurch Cathedral**, in Montreal, 7-1770
- Christian**, character in "Pilgrim's Progress," 5-1128, 1126, 1183
- Christian IV**, king of Denmark and Norway, 10-2558; 14-3655-56, 3658, 3660, 3662, 3772
- "Christian Hero"**, by Steele, 12-4726
- Christian, Mr.**, dancing master, 4-963
- Christiania**, capital of Norway, 14-3655-56, 3662
- Christianity**, anagram of, 19-5037, 5132
 and the Jews, 24-6334
 early days of, 18-4789
 in Austria-Hungary, 11-2900; 13-3482
 in Denmark, 14-3654, 3656
 in England, 2-467-68
 in France, 2-2067
 of Armenians, 15-3862
 St. George and, 1-219
 spread of, 2-534, 541; 10-2550, 15-3856
 see also George, St., Great Britain, Protestants, Rome, etc.
- Christians**, and Constantine, 20-5384
 and Plato, 5-1328
 early, 12-3186-87
 in Africa, 18-4302, 4306
 in India, 6-1638
 in Rome, 20-5282; 22-5928-30
 martyrdom of, 19-5098; 20-5277
 wars with Mohammedans, 15-3860
 see also Saints, stories of
- Christiansand**, port of Norway, 14-3656
- Christian Science**, development of, 12-3122
- Christina**, daughter of Gustavus Adolphus, 10-2558
- Christina**, queen of Sweden, and America, 2-529
- Christmas**, presents for, 19-4926
- "Christmas Carol"**, by Dickens, 9-2197; 10-2459
- Christmas Day**, a holiday, 4-964; 17-4470
- Christmas Eve**, tale of, 9-2180
- Christmas-rose**, a flower, 17-4348; 20-5228
- Christmas-tree**, for the birds, 9-2268
 how to trim, 22-5920
- Christofori**, pianoforte of, 5-1088
- Christopher**, St., story of, 4-1024-25
- Christopher**, the Friar, 10-2632
- Chromids**, family of fishes, 10-2709
- Chromium**, alloys of, 7-1888
 in steel, 22-5690
- Chronicle**, Hall's, 21-5484
 Holinshed's, 21-5484
- Chronometer**, the first, 7-1682
- Chrysalis**, of insects, 1-49; 11-2966, 2969-70;
 12-3011-21; 24-6375
 of silkworm, 7-1826-28
 see also Insects
- Chrysanthemums**, flowers, 3-617; 4-870; 6-1519;
 15-face 3809, 16-4136
 legend of, 7-1705
 paper, 16-4198
- Chrysler's Farm**, battle of, 3-759
- Chrysochroa**, an insect, 12-3194
- Chrysolite**, a precious stone, 24-6377, 6381
- Chub**, a fish, 10-2705
- Chucks**, Mr., character in "Peter Simple," 8-2028
- Chuck-will's-widow**, a bird, 7-1764; 9-2343
- Chufu**; see Khufu
- Church**, F. E., American painter, 18-4220, 4249
- Church**, American, in Paris, 21-5538
 and Copernicus, 7-1677, 1680
 as John Bull's Mother, 9-2352
 contentions in the; see Monks, famous
 decorations of Russian, 15-3880
 early leaders of, 18-4789
 Eastern; see Church, Greek
 for Modeltown, 4-933
 Greek, 12-3186, 3194; 14-3722, 3726; 15-3798, 3802
 in Mammoth Cave, 5-1308
 in the Colonies, 4-964
 of England, 2-524; 7-1746, 1859, 1862; 19-5096
 of Rome, 12-3056, 3076; 19-5097; 20-5225; see
 also Roman Catholic
 of spoils, 17-3886
 power of, 2-282
 Western; see Rome, church of
- Churchill**, Lord Randolph and Lions, 22-5802
- Churchyard**, in "Blue Bird," 22-5839
- Churning**, effect of, 8-1132, 1142
- Churubusco**, battle of, 7-1844
- Chuzzlewit**, Jonas, character in "Martin Chuzzlewit," 10-2674
- Chuzzlewit**, Martin, character in "Martin Chuzzlewit," 10-2673
- Chyle-food**; see Bee-Jelly
- Cibber**, Colley, poems; see Poetry Index
- Cicadas**, injurious insects, 12-3196-97
- Cicero**, Roman orator, 2-441-42; 19-4901; 20-5278
- Cid**, El, feats of, 13-3340, 3344
- Cigar-boxes**, cabinet of, 19-4924
- Cigar-making**, in Brazil, 20-5369
- Cigogne**, et la Fermier, 18-4854
 loup et la, 17-4347
- Cilia**; see Hairs, in nose, lungs, etc.
- Cilicia**, gift of, 22-5788
- Cimabue**, Giovanni, Italian artist, 5-1178;
 11-2787-88, 2791; 17-4589
- Cimbr**, and Rome, 20-5278
- Cinchona**, discovery of its virtues, 22-5775
- Cincinnati**, College of, 17-4570
 settlement of, 7-1834
- Cincinnati**, story of, 20-5273
- Cinderella**, costume for, 20-5346
 story of, 3-789; 6-1477-78, 1480
- Cinder-heaps**, of Romans, 22-5888
- Cineraria**, cultivation of, 14-3554
- Cinnabar**, in Canada, 23-6094
- Cinquefoil**, flowers of, 16-4134
 the marsh, 19-5089, 5092
- Cion**, 22-5896
- Circe**, Greek witch, 1-76
- Cirole**, a shape, 11-2927
 making, 13-3470
 owl and frog made from, 6-1607
 why things move in, 14-3676
- Circuit**, electrical, 14-3575
- Circus**, of Rome, 19-5098, 5100; 20-5278
- Circus Maximus**, in Rome, 20-5272

GENERAL INDEX

- Cirrocumulus**, clouds, 14-3682
Cirrus, clouds, 14-3682
Cisco, a fish, 10-2704
Citadel, of Cairo, 23-6179-80
Cities, buried in sand, 16-4118, 4121
 free, 10-2554
 value of, 11-2908
"Citizens of Calais", statue by Rodin, 16-4181
Citrine, a color, 10-2696
City, Celestial, in "Pilgrim's Progress," 8-1128, 1181, 1185-86
City Hall Park, in New York, 19-5006
City of Magnificent Distances; see Washington, D. C.
City-republics, in Germany, 10-2600
Ciudad, Rodrigo, character in "Charles O'Malley," 11-2795
Civet, life-history, 1-157, 160
Civil War, American, 8-1276; 8-2041; 8-2274
 Lincoln during, 3-787
 navy in American, 12-3010
 West Pointers in, 18-4736
 see also Decoration Day, Memorial Day
Civil War, of England, 4-1034, 1038; 14-3693; 18-4746
Cladodes, leaf-like twigs, 18-4654
Cladia, character in "Cloister and the Hearth," 16-4073
Clam, a bivalve, 3-672; 10-2616
Clamp, for vegetables, 17-4387
Clan-name, Hopi, 14-3628
Clans, Indian, 1-17
Clapa, chief, 2-465
Clapperton, Hugh, explored Africa, 2-300
Clare, Ada, character in "Bleak House," 10-2460
Clare, John, poems; see Poetry Index
Clare, Richard, Earl of Pembroke, and Dermot, 21-5554
Clarendon, Earl of, and Charles I, 2-527, 531; 7-1858
"Clari", an opera, 2-478; 12-3050
Claribell, character in "Faerie Queene," 3-702
"Clarissa", by Richardson, 7-1749
Clark, Isabella, married Sir John Macdonald, 16-4324
Clark, Miss, married Copley, 16-4216
Clark, William, explorer, 6-1397
Clarke, James Freeman, and Julia W. Howe, 12-3053
Classes, open air, 11-2767
Claude Lorraine, French artist, 19-5097, 5106
Claudio, Shakespearian character, 3-561, 563
Claudius, emperor of Rome, reign of, 2-537
Claudius, Shakespearian character, 2-449
Claus, story of Little and Big, 2-393, 395
Clavaria rugosa; see Coral fungus
Claverhouse, character in "Old Mortality," 7-1778
Claverhouse's Life Guards, in "Old Mortality," 7-1776
Clavering, Sir Francis, character in "Pendennis," 13-3518
Clavering Park, in "Pendennis," 13-3515
Clavichord, a musical instrument, 8-1087-88
Clavicle, or collar-bone, 16-4200
Claws, cutting, 20-5176
 of ant-eater, 4-1017-18
 of armadillo, 4-1018
 of cat, 8-2008
 of seeds, 13-3813
 on bird's wings, 6-1504, 1509-10
Clay, Henry, addressing U. S. Senate, 9-2434
 American statesman, 10-2438, 2441
 and compromise of 1850, 8-2042; 13-3492
 and nullification, 13-3491
Clay, articles made of, 8-2269
 for bird's nest, 22-5748
 for china-making, 9-2420; 17-4539, 4546
 for writing upon, 13-3480-81; 18-3909; 19-4958, 4960
 how made, 2-429
 in Canada, 23-6094
 London, 11-2919
 modeling in, 23-6004
 shapes for seeds, 10-2581
 see also Kaolin
Claypole, Noah, character in "Oliver Twist," 10-2564
Clayton, Dr., and coal-gas, 3-665
Clayton, town of, 23-6122
Claytonia; see Spring-beauty
Clearing House, in New York, 19-5010
Clear Lake, in Canada, 1-223
Cleas, for box, 8-1360
Cleek, golf-club, 12-3211, 3213
Clef, bass and treble; see Music, lessons
Clematis, a plant, 20-5227
 cultivation of, 8-2039
 varieties of, 20-5228, 5234
Clemens, Samuel L., American author, 6-1608, 1620; 8-2095-97
Clement, of Rome, 9-2351
Clement VII, pope of Rome, and Cellini, 19-5096, 5106; 22-5853
Clement, Brother, character in "Cloister and the Hearth," 16-4074
Clennam, Arthur, character in "Little Dorrit," 10-2461
Cleobis, a dutiful son, 9-2315
Cleobis, a Greek, 5-1321
Cleopatra, queen of Egypt, life of, 2-442; 22-5784, 5785, 5787
 reign of, 13-4853
 statue of, 18-4666
Cleopatra's needles, 13-3481; 19-4848; 19-5039
Clergy, of France, 16-4099-4100
Clerk, ancient meaning of, 2-493
 rock; see Parson and his Clerk, rocks
 tale told by, 2-493
Clerk-Maxwell (James), and light, 7-1781; 20-5164, 5166
Clermont, council of, 6-1550
Clermont, ship, 1-80; 6-1397; 11-2712
Clethra, a shrub, 18-4756, 4763
Cleveland, Esther, born in White House, 2-403
Cleveland, Francis Pickens, of the White House, 2-399, 403
Cleveland, Grover, administrations of, 13-3488, 3494
 as president, 2-403; 9-2378, 2382
Cliffden, wireless station at, 14-face 3574
Cliff-dwellers, homes of, 14-3627
Cliff House, on San Francisco Bay, 22-5720
Cliff-swallow, nests of, 7-1762
 see also Eave-swallow
Clifton, disaster at, 6-1500
Clifton, suspension bridge of, 1-24, 31
Climate, of earth, 12-3044, 3232
 of France, 9-2416
 insular and continental, 7-1878
 studied by Weather Bureau, 6-1437
 various kinds of, 16-4313
Clinton (De Witt), and Emma Willard, 12-3121
 and Erie Canal, 6-1388; 7-1838; 18-4766
Clinton, Governor, and St. Paul's Church, 19-501
Clinton, Sir Henry, during American Revolution, 4-997, 1002, 1008; 12-5920
Clintonia borealis, a plant, 11-2884
Clisthenes, and Hippocides, 9-2315
Clitocybe, velvety, 19-face 4882
Clive (Robert), and India, 8-1114, 1118; 7-1718
Clock, of Hungary, 21-5659
 of the Cynic, 23-6217
 Raleigh's, 21-5408, 5410
 sun and wind and, 15-3879
Globes, Knecht, 9-2184
Clock, and pendulum, 14-3671
 case for a, 18-4824
 Colgate, 6-1536
 floral, 18-4015
 how to tell time by, 6-1546
 in America, 6-1540
 in Metropolitan tower, 6-1543
 in the Capitol, 7-1686
 manufacture of, 10-2686
 problems concerning, 1-256; 4-941
 Sheraton, 23-6175
 story of the, 6-1537
Clock-Tower, at Westminster, 6-1544
Clodion, French sculptor, 16-4174
Clogs, worn in Lancashire, 9-2423
"Cloister and the Hearth", by Reade, 9-2327; 18-4069
Clontarf, battle of, 21-5554
Closet, for shirt-waists, 11-2722
Clot-bur, a plant, 20-5214, 5216
Cloth, and Menclius' mother, 21-5479
 and weaver, puzzle of, 9-2271, 2356
 fireproof, 23-6095
 for shoes, 12-3106
 ice kept cold by cloths, 3-693
 made in Amlena, 4-994; 9-2422
 of cotton, 19-4886, 4893
 woven by Indians, 1-16
Clothes, and microbes, 4-906
 cleaning, 17-4494
 color of clothing, 17-4372
 Emperor's, 14-3705
 for football, 24-6277
 harm of tight, 7-1651

GENERAL INDEX

- Clothes**, of Indians, 1-17
 removed from injured, 15-3984
 renewing old, 14-3556
 seeds carried in, 15-3990
 should be loose, 2-2682
 to put out fire in, 12-3113
 warmth of, 2-692
- Clothes-moth**, destructive insect, 12-3020
- Clothes-pegs**, fighting, 4-938
- Clothes-pin race**, for children, 5-1303
- Clothes-pins**, dolls from, 17-4495
- Clothing-industry**, in New York, 10-2686
- Clots**, of milk, 11-2828
- Cloud-burst**, cause of, 23-5991
- Clouds**, above the, 14-3681, 3683
 and rain, 17-4370
 and sunlight, 6-1587; 9-2007; 12-3291; 17-4587
 disappearance of, 19-4878
 formation of, 2-428; 4-919; 50-5024
 forms of the, 14-3682
 part of earth, 17-4585
 shadows of, 7-1881
 silver lining of, 7-1790
 thunder in, 6-1589; 12-3389
- Clotha** (Arthur M.), death of poet, 23-6039
 poems: see Poetry Index
- Clout**, Colin, character in "Faerie Queens," 3-702
- Glove**: see Carnation
- Glove-kitch**, of a rope, 12-3326
- Glove-pink**, a flower, 20-5226
- Glover**, plant, 2-2384; 16-4135; 17-4352
 state flower, 23-5816
- Gloves**, from Zanzibar, 16-4308
- Glovis I**, king of France, 2-2068-69; 9-2348
- Glovis II**, king of France, 2-2069
- Glovis**, made a dinner-table, 2-2267
- Glovin**, character in "Tollers of the Sea," 12-4224
- Globs**, for golf, 12-3211
 of police, 14-3747
- Glomps**, a game, 2-2143
- Gloxy Museum**, in Paris, 21-5538, 5540
- Glozb**, a shepherd, 4-1038
- Glyde**, steamship-building on, 10-2492
- Glydesdale**, a horse, 23-6048
- Glytocybe**, deceiving, 19-face 4840
- Gonches**, of early travelers, 23-6051
 travel by, 1-307
- Gonulation**, of proteins, 21-5514
- Gonny**, a monkey, 3-629
- Coal**, and coal-gas, 3-665-66
 buried, 11-2801
 burning of, 4-917-18; 10-2538; 17-4369; 19-4874
 consists of ferns, 1-188
 discovery of, 17-4484
 elements in, 22-5592
 energy of, 17-4391
 for Alpine scene, 18-4704-06
 for fuel, 14-3775
 formation of, 11-2919
 gas in, 10-2538
 hydrogen in, 5-1189
 in Alaska, 15-4058
 in Asia, 15-3924
 in Australia and Tasmania, 6-1372, 1374
 in Belgium, 14-3550
 in Bulgaria, 13-3242
 in Canada, 2-1918; 21-5544, 5612; 22-5780; 23-6092
 in Chile, 20-5366
 in France, 2-2420
 in Germany, 11-2766
 in Holland, 14-3548
 in iron-making, 22-5988
 in Newfoundland, 24-6296
 in Rumania, 12-3240
 in Russia, 15-3798
 in Spain, 12-3347
 in United States, 1-13
 machine for cutting, 4-934-35
 plants that formed, 2-3701
 price of, 12-3814
 problem concerning, 2-1522
 production of, 10-2680
 story of a piece of, 4-929
 tax on, 2-1252
 trees in, 14-3569
 used for heating, 4-1042
 used in engines, 7-1840
- Coal-box**, making a, 10-2516
- Coal-dust**, is carbon, 4-553
- Coal-fields**: see Coal
- Coal-gas**, and gravity, 22-5988
 hydrogen in, 5-1189
- Coal-gas**, manufactured, 2-415, 420; 3-600, 603
 see also Gas-lights
- Coaling-stations**, American, 2-2156
- Coal-measures**, discovery of, 17-4484
- Coal-mine**, air in, 17-4876
 description of, 4-832, 837
 heat in, 3-647, 812
 lights in, 16-4309
 safety-lamp in, 2-664; see also Safety lamp
- Coal-tar**, in Nova Scotia, 21-5544
 loss of, 22-5689
 use of, 10-2538
 value of, 10-2686
- Coamings**, of a boat, 12-4619
- Coastal Plain**, of the United States, 1-10
- Coast-Indians**, a tribe near Vancouver, 11-2783
- Coasting**, in Canada, 20-5221
- Coast-patrol**, Boy Scouts on, 23-6142
- Coast-range**, in North America, 1-10; 22-5778
- Coat**, of bowel, 2-2366
 of stomach, 2-2363
- Coat**, of St. Stephen: see St. Stephen, coat ar
 sword of
 warmth of, 3-692
- Cobalt**, a mining district, 23-6092, 6094
- Cobalt**, a color, 10-2696
- Cobalt** (element), chloride of, 15-3968
 in Ontario, 1-228
 scarcer than gold, 20-5319
- Cobbler**, in his shop, 12-3101
 The Merry Cobbler and his Coat, 2-2398
- Cobbler-fish**, picture of, 10-face 2600
- "Cobbler Kesar's Vision"**, by Whittier, 12-3102
- Cobequia Bay**, in Nova Scotia, 21-5544
- Coblenz**, bridge at, 1-36
- Coblenz**, German city, 11-2763, 2768
- Coburns**, of Europe, 2-1997, 2001
- Cobra**, in India, 6-1631
 poisonous serpent, 6-1880-82, 1888
- Cobweb**, drawing a, 2-746
- Coca**, a drug-plant, 17-4510
- Cocaine**, an anæsthetic, 18-4633
- Cochins**, kind of fowl, 6-1557
- Cochrane**, Sir John, rescue of, 11-2813
- Cochrane**, Lord, invaded Peru, 12-4608
- Cock**, crowing of, 18-4113
 in balloon, 22-5810
 long-tailed, 23-6217
 stuffed, for toy zoo, 4-927
- Cockade**, tricolored, 2-2282
- Cockburn**, Admiral, and Fort MacHenry, 12-3052
- Cockchafer**, an insect, 12-3194; 12-3203
- Cock-fighting**, a sport, 6-1558; 2-2155
- Cock-of-the-rock**, a bird, 7-1757, 1764
- Cock-of-the-woods**, a woodpecker, 12-3155
- Cockpit**, of Europe, 12-3184
 see also Cock-fighting
- Cockroaches**, injurious insects, 12-3198, 3204
- Cocoa**, as a drink, 13-3413, 3415
 food value of, 12-3183
 from Brazil, 20-5370
 in West Indies, 23-6048
 manufacture of, 2-2266
 plantations of, 18-4605
 see also Cacao
- Cocoa-beans**, source of chocolate, 2-2253
- Cocoonant**, candies made of, 14-3552, 3558
 carried by sea, 15-3890
 crabs and, 10-2614
 in New Guinea, 6-1492
 in Philippines, 2-2152-53
 milk of, 2-2009
 of Samoa, 2-2156
 on coral islands, 4-921
 palm that bears, 2-1998-99, 2152-53
 rope from fibre, 15-4005
 shell for boat, 15-3900
 value of, 2-1998-99
 where it grows, 2-2262
- Cocoon-pods**, growing, 2-2252
- Cocoons**, of bee, 11-2854
 of insects, 12-3018-19, 3021; see also Insects
 of silkworms, 7-1823-25
- Cod**, Cape, and moraine, 1-14
 cranberries on, 2-651
 fisheries of, 15-3849
 landing of Pilgrims, 2-526
 visited, 2-555
- Cod**, eggs of, 10-2601
 fishing for, 2-552, 557; 15-3842, 3847, 3953
 3954, 4060; 20-5273; 24-6293
 trade in, 2-2974
- Codes**: see Laws

GENERAL INDEX

- Codes, telegraphic, 14-3578**
 see also Morse Code
- Codfish, uses of, 10-2602-03**
- Codlin-moth, injurious insect, 12-3204, 3206**
- Cody, Col. (William), aeroplane of, 12-3204, 3206**
- Cour-de-Lion: see Richard I, King of England**
- Coffee, adulterated with chicory, 16-4207**
 as a drink, 12-3413
 from Brazil, 20-5370
 from East India, 14-3548
 in Arabia, 18-3858; 22-6102
 in Costa Rica, 17-4407
 in New Guinea, 8-1492
 in Philippines, 8-2154
 in Porto Rico, 8-2156
 in Samoa, 8-2156
 in West Indies, 22-6045-48
 leaves preferred by ants, 11-2970
 not a food, 12-3183
 problem concerning, 2-491
 where grown, 3-860
- Coffee-pot, of polished metal, 22-5996**
- Coffin, poisonous, 10-2609-10**
- Coma, Lucretia: see Mott, Lucretia**
- Coma, and Father Lacombe, 22-6144**
 giant's, 5-1309
- "Coma-ships," too heavily laden, 6-1588**
- Cohesion, a force, 3-607, 694; 22-5873, 5894**
- Coho, a fish, 10-2703; 15-3954**
- Cohosh, the black, 19-5086**
- Coll, electric, 14-3576**
 of the ear, 15-3912, 3917
- Cola, and the handkerchief, 15-4047**
 for making designs, 15-3965
 leather, 11-2833
 made of gold, 17-4374
 making, 12-3045
 metals for, 5-1317
 milled edges of, 12-3045
 of Great Britain, 14-3645
 of nickel, 23-6092
 of Parthians, 20-5154
 of Persia, 20-5148, 5155
 problem concerning, 3-624
 tricks with, 1-106; 5-1248, 1361, 17-4493
 used to draw cat, 14-3554
 wandering, 8-1942
- Coir, from cocoanut-husks, 15-4006**
- Coke, in iron-making, 22-5683-89**
 in Nova Scotia, 21-5544
 nearly pure carbon, 2-416; 10-2528
- Colchester, King of, 22-5913**
- Colchester, battle of, 22-5913**
- Colchis, and the Golden Fleece, 1-204; 20-5318**
- Cold, absolute, 16-4086**
 and microbes, 16-4088
 and numbness, 17-4375
 causes blueness, 22-5889
 effects of, 17-4484
 feeling of, 17-4587
 liquid-air produces, 16-4086
 rate of travel, 7-1790
 shivering from, 9-2247
- Cold (allment), cause of a, 10-2540**
 effects of a, 12-3232; 17-4484; 24-6233-34
 hoarseness during a, 10-2471
- Cold-frame, management of, 8-2140**
- Cold Harbor, battle of, 8-2053**
- Cold-in-the-Head, character in "Blue Bird," 22-5839**
- Cole, Thomas, American painter, 16-4220, 4222**
- Coleman, Mr., and Payne, 12-3050**
- Coleridge, Samuel, English poet, 18-4731; 22-6034**
 poems: see Poetry Index
- Cole-tits, birds, 9-2212**
- Colic, cause of, 9-2366**
- Collar, embroidered, 21-5645**
- Collar and cuffs, manufacture of, 10-2686**
- Collar-bone, fracture of, 17-4382-83**
 of body, 10-2468, 2572
 see also Clavicle
- Colleen Bawn, a rock, 21-5552**
- "Colleen Bawn," song, 14-3771**
- College of the City of New York, description, 17-4571**
- College of New Jersey: see Princeton University**
- College of Society of Friends, 22-5937**
- Colleges, in Canada, 21-5402**
 what they are, 17-4567
- College-songs, writing of, 12-3054**
- Collegiate Institute, of Saskatoon, 8-1277**
- Colonnade, Bartholomew, monument to, 5-1172, 1174; 16-4173, 4177**
- Collie, a shepherd-dog, 8-510; 24-6821**
 taken to hospital, 21-5511-12
- Colliers, naval, 22-6304**
- Collingwood, Canadian town, 22-6120**
- Colly-wobbles, cause of, 8-2366**
- Cologne, German city, 11-2762; 14-5616**
- Cologne Cathedral, building of, 11-2762**
 unknown architect of, 11-2769; 16-4225, 4240
- Colombia, and Panama Canal, 22-5593**
 explored, 4-867
 gems from, 24-6330
 history of, 17-4406, 4514; 12-4603-04, 4608
- Colon, city of, 8-2156; 21-5594**
- Colonial Dames of America, and Flag-raising Day, 17-4467**
- Colonies, colleges and universities in, 17-4553**
 of America, Great Britain, etc.: see America, colonies, etc.
 utility to mother country, 4-993
- Colonna, Brother, character in "Cloister and the Hearth," 16-4073**
- Colonna, Vittoria, and Michael Angelo, 19-5099**
- Colonna Madonna, picture by Raphael, 17-4590**
- Color, and bees, 16-4362**
 and heat, 13-3337; 14-3685
 and size, 13-3388
 and sound, 16-4875
 chameleon, changes of, 5-1213, 1219; 10-2473
 difference in, 17-4371
 effect of, 11-2802
 for Easter eggs, 13-3324
 human, changes of, 22-5993
 in fire, 22-5892
 in the dark, 15-4022
 in voice, 16-4094
 iron and, 6-1431; 14-3572
 is pitch of light, 20-5243
 loss of, in face, 12-3228
 of autumn leaves, 5-1164
 of bad water, 8-2011
 of birds' eggs, 7-1796
 of blood, 18-4616
 of eyes, 16-4330; 22-5889
 of flag, 20-5397; 21-5491
 of flat fish, 10-2606
 of flowers, 12-3143; 10-4114, 22-5894
 of gas-flame, 7-1878
 of glass, 5-1264
 of hills, 13-3387
 of meat, 13-3273
 of plants and buds, 17-4486
 of rose, 22-5891
 of skin, 22-5889
 of soap, 14-3776
 of stars, 11-2737
 on the ceiling, 10-2588
 produced by reflection, 20-5246
 protective, 7-1792; 12-3013; 13-3444-45
 seeing, 12-3046; 17-4428-29, 4523
 that cannot be seen, 14-3778
 what fades, 12-3327
 what it is, 1-166
 see also Spectrum
- Colorado, admitted, 13-3493**
 cliff-dwellers of, 14-3627
 coal in, 10-2680
 gold in, 10-2678
 history of, 7-1844
 irrigation in, 21-5418
 lead in, 10-2680
 marble in, 20-5349
 mountains in, 1-10
 purchase of, 13-3492
 state flower of, 22-5815
- Colorado-beetle, injures potatoes, 12-3195**
- Colorado Desert, salt in, 1-237**
- Colorado River, Grand Cañon of the: see Grand Cañon of the Colorado**
- Color-blindness, cause of, 1-166; 17-4525**
- Color-guard, at West Point, 21-5494**
- Color-printing, on presses, 14-3615**
- Colors (for painting), mixing, 8-1961**
 use of, 10-2666
- Colosseum, of Rome, 2-634; 20-5277, 5282; 22-5928-29**
- Colossus, of Rhodes, 4-910**
- Colt, Samuel, and pistols, 11-2713**
- Coltsfoot, a plant, 11-2879; 15-4016; 16-4136; 16-4652, 4653**
- Columbia, St., missionary to Gt. Britain, 2-468; 12-4783, 4890; 21-5552**
- Columba, a dove, 12-4763**
- Columbia, burning of, 8-2054**
 capital of South Carolina, 22-5955

GENERAL INDEX

- Columbia River**, *as boundary*, 7-1842
in America, 6-1397; 18-3953; 22-5778
salmon in, 10-2703, 18-3850
valley of, 3-649
- Columbia River Highway**, *route of*, 22-5719
- Columbia University**, *history of*, 4-1002; 17-4568
- Columbine**, *a plant*, 11-2883; 15-3816; 16-4134; 16-4763; 20-5228
a state flower, 22-5815
- Columbus, Christopher**, and Queen Isabella, 10-2445; 13-3342
born at Genoa, 12-3078, 3087
bronze doors bearing scenes of life, 7-1685
burial of, 23-6049
centennial of, 13-3494
discoveries of, 1-9; 2-272; 4-856; 8-1930, 2156; 16-4077; 17-4464; 23-6041
monument to, 13-3348
named Indians, 10-2575
paintings of, 1-58; 7-1686; 19-5106
poem about, 3-547
statues of, 7-1685; 18-4672
see also Landing of Columbus
- Columbus, ship**, 12-3004
- Columbus Circle**, *in New York*, 19-5012
- Columbus Day**, *celebration of*, 17-4464
- Columbus, column of Rome**, 22-5928
- of Pompeii**, 23-6225
spinal; *see Backbone*
see also Backbone, Nelson, column of, Trajan, column of, Vertebrae, etc.
- Colza-oil**, *for lamps*, 3-669
- Colman, Charlotte B.**, *American painter*, 16-4258
- Combination Lock**; *see Locks*
- Combs**, *of bees*, 11-2853, 2855
- Combs**, *of the Northmen*, 14-3654
- Combustion**, *form of chemical union*, 7-1695
- "Comedy of Errors"**, *by Shakespeare*, 3-637; 21-5584
- "Come if you dare"**, *motto*, 21-5492
- "Come o'er the Stream, Charlie"**, *song*, 14-3770
- Comet**, *a steamboat*, 10-2486, 2492
- Comet**, and meteorites, 7-1882
and meteors, 10-2546
and planets, 12-3149
description of, 10-2541
early students of, 7-1677
Halley's comet, 10-2541, 2543
Jupiter's effect upon, 9-2393
movements of, 8-1966, 1968
path of, 8-1968
story of, 1-143, 148
tail of, 8-2094
- Comfrey**, *a plant*, 16-4136; 19-4956
- Cominius, Pontius**, *fetches Camillus*, 14-3594
- Comma-butterfly**, *mimicry of*, 13-3450
- Commander**, *naval rank*, 23-6314
- Commander-in-chief**, *of United States Army and of Navy*, 6-1436
- Commandments**, and Book of the Dead, 16-4850
- Commas**, *amusement with*, 22-5743
- "Commentaries on the Gallic War"**, *by Julius Caesar*, 20-5280
- Commerce**, *between colonies and mother countries*, 4-953
United States department in charge of, 8-1437
- Commerce and Labor**, *United States department of*, 8-1437
- Commissary Department**, *of Canal Zone*, 21-5598
- Commission**, *Electoral, special court*, 9-2378
- Commissioners**, *Territorial, of Canada*; *see Canada, Territorial Commissioners*
- Commodus**, *emperor of Rome*, 2-541
- Commons**, *of England (land)*, 2-465, 4-859
- Commons**, *of France*, 16-4100
- "Common Sense in the Household"**, *by Harland*, 8-2098
- Commons, House of**, *in Canada*; *see Canada, House of Commons*
- Commons, House of**, *in Great Britain*, 3-665, 667; 4-1038; 7-1858, 1864; 8-2071
see also Parliament, Houses of
- Commonwealth**, *of England*, 4-1039-41
- Commune**, *in Paris*, 9-2290; 21-5535
- Communes**; *see France, Netherlands*
- Como, Lake**, *in Italy*, 12-3074
- Companion**, *of a boat*, 18-4619
- Companion-hood**, *of a boat*, 18-4619
- Companion-ladder**, *of a boat*, 18-4619
- Companion-way**, *of a boat*, 18-4619
- Company**, *meaning of word*, 1-246
- Compass**, *iridium in*, 22-5875
magnetic or mariner's, 8-1962; 17-4482; 20-5252, 5255; 21-5527
needle of, 8-2167
- Compass**, *watch as a*, 18-4826
- Compasses**, *drawing instruments*, 2-379; 10-2696; 13-3470
- Complexion**, *colors of*, 1-48, 167
- Composers**, *great*, 13-3285
wrote for clavichord and harpsichord, 5-1088
- Composite**, *family of plants*, 16-4132, 4136, 4205
- Compound**, *(an enclosure)*, *African*, 7-1780; 20-5323
- Compounds**, *chemical*, 7-1693; 16-4116
none in sun, 8-2094
three kinds of, 7-1813
what they are, 4-956, 1032; 6-1447
- Compromise**, *of Hungary*, 11-2905
- Compromise of 1850**, *history of*, 7-1846; 9-2434; 10-2442; 13-3492
see also Missouri Compromise
- Comrades**, *man who thought of*, 19-4974
- Comte, Auguste**, *French philosopher*, 20-5291
- "Comus"**, *Milton's*, 7-1688; 22-5674
- Conan**, *British chief*, 22-5912
- Concave**, *what this means*, 6-1430
- Concentrate**, *copper*, 10-2685
- Concept**, *process of thought*, 19-5080
- Concord, Mass.**, *battle monument at*, 12-3050
history of, 4-999; 18-4669
- Concord Bridge**, *battle of*, 4-999
- Concorde, Place de la**, *in Paris*, 9-2284, 2415; 21-5536, 5538
- Concord Hymn**, *by Emerson*, 12-3050
- Concrete**, *for ships*, 16-4243
making, 16-4241
- Concrete-mixers**, *machines*, 16-4244
- Condé, Prince de**, *leader of the Huguenots*, 2-334; 14-3695
- Condenser**, *for magic-lantern*, 11-2807
in gas-making, 2-416
of radio-apparatus, 14-3582
- Condiments**, *no food-value*, 13-3413
- Condor**, *a bird*, 7-1895, 1897
- Conduction**, *of heat*, 4-1085; 16-4233, 4310
- Conductor**, *of electricity*, 22-5889
- Cones**, *of evergreens*, 14-3748-50, 21-5430, 5433
- Cones**, *of the retina*, 11-2911; 17-4425, 4427, 4523
- Coney**, *a fur*, 18-5074
see also Hyrax
- Confectioner**, *in Cairo*, 23-6181
- Confederacy**, *states of the*, 23-5957, 5966
war-song of the, 12-3051
- Confederate States of America**, *organization of*, 8-2044
- Confederation**, *the German*, 10-2598
- Confederation, Articles of**, 6-1390-91
- Confederation, Fathers of**, *in Canada*, 5-1276
- "Confessions of an English Opium-eater"**, *by De Quincey*, 16-4732-33
- Confessor, The**; *see Edward the Confessor*
- Confetti**, *in bird's nest*, 22-5746
- Confluents**; *see Coblenz*
- Confucius**, *founder of religion*, 12-3023-24, 3026
- Conger-eel**, *a fish*, 10-2481, 2483, 2706
- Conglomerate**, *kind of rock*, 20-5349
- Congo**, *children of the*, 16-4305
forests of, 12-3127, 3130
French possessions in, 9-2426
monkeys in, 22-5813
- Congo Free State**, *rubber in*, 22-5797-97
see also Africa, rubber in
- Congo River**, *in Africa*, 2-302, 12-3127; 16-4300, 4305, 4308
- Congo State**, *in Africa*, 16-4308
- Congress**, *ship*, 8-2048-49
- Congress Colors**, *American flag*, 21-5492
- Congress, Continental**, 4-998; 6-1390
second, 4-1000
- Congress, Dominion**, *of Trade and Labor*, 16-4128
- Congressional Library**, *in Washington*, 7-1686, 18-4675
- Congress Fool**, *in Yellowstone Park*, 3-584
- Congress, United States**, *legislative power of*, 3-765; 6-1434
rights of, 6-1390
West Point and Annapolis and, 18-4742
- Conjurer**, *joke of boy*, 4-940
see also Medicine-man
- Connaught, Duke of**, and Sir Richard Owen, 4-869
governor of Canada, 5-1281; 6-1456
- Connaught**, *division of Ireland*, 21-5551
- Connecticut**, and Northwest Territory, 7-1834
approved Constitution, 6-1392
brownstone in, 20-5349
cutlery in, 18-4802
flag of, 21-5492

Cork, city of, 21-5555
Cork, balanced, 22-5737
 Dutch family made of, 2-436
 forced into bottle, 12-3934
 game with corks, 22-5163
 puzzle about, 1-110
 specific gravity of, 12-2822
 waterproof, 2-693
Corkerew, in Mammoth Cave, 5-1309
Corman, Ferdinand, picture of returning Greeks, 20-5204
Cormoran, a giant, 7-1810
Cormorant, a bird, 7-1640 9-2340
 egg of, 7-face 1780
 trained, 2-1866, 2-1971
Cornus, of plants, 20-5230
Corn, food plant, 1-15-17, 2-278 5-1132, 10-2578
 12-3217, 22-6090
 husking and shelling, 11-2714
 in Egypt, 12-4304
 in Louisiana, 22-5960
 in Philippines, 2-2154
 in West Indies, 17-4506 22-6048
 Italian trade in, 12-3086
 name for grain or Indian corn, 22-6090
 of the English, 17-4356
 production of, in United States, 2-1181
 squirrel and the, 21-5462
 tassel on ear of, 22-5874
Cornucopia, a plant, 16-4125, 4212-13
Cornus, a bird, 2-1978
Cornus, of the eye, 12-4046, 12-4320 17-4425
Cornelia, mother of the Gracchi, 2-438 1-9
 12-2868, 20-5278
Cornelia, character in "Ciolester and the
 Hearth," 12-4069
Cornell, Ezra, and cable, 10-2494
Cornell University, founding of, 10-2494 17-4570
Cornus, dwarf in, 7-1905
 in hockey, 12-5029
Cornus, dance: see Laudnum bunches
Cornus, dance-figure: see Dances
Cornus, a plant, 2-1362, 17-4348 4356
 and Queen Louise, 7-1705 22-5816
 for designs, 12-2381
Corn-law *Rayner*: see Elliott, Ebenezer
Corn-law, of England, 2-1151
Cornus, cause of, 12-4019
Cornus, as a food, 11-2950
Cornwall, Barry, poem: see Poetry Index
Cornwall, Duke of, Shakespearean character, 2-441
Cornwall, on the St Lawrence, 22-6122
Cornwall, radium in, 2-646
Cornwallis, General (Charles), during Revolution, 4-1008
 surrender of, 2-722, 4-1009, 6-1389, 21-5537
Cornworm: see Cotton-boll worm
Cornelia, of flower, 12-4134
Cornus, of the sun, 2-2050-94, 12-5025
Cornus, a constellation, 10-2638, 2641
Cornus (Francisco Vasquez de), expedition of, 2-276
Cornus, chair, of England, 4-1035 12-4688
 see also Chair, coronation
Cornus, care of, 12-4136
Cornus, element, 2-2094 12-5025
Cornus, a sea-animal, 10-2615
Cornus, and George Washington 20-5383
Cornus, negative, 20-5396
 white, of blood, 22-5902
Cornus, Antonio A. da, Italian painter, 2-720-53
Cornus: see Pirates, Barbary
Cornus, island of, in Mediterranean 2-2422,
 17-4355, 20-5276
Cornus, avenue of Rome, 22-5933
Cornus, and Iron Industry, 22-5689
Cornus, Gaspar, explored New World, 2-282,
 2-436
Cornus, Fernando, and Mexico, 1-19 2-274-75,
 17-4356, 4398
Cornus, in Canada, 22-6094
Cornus, battle of, 2-715
 Moore's retreat to, 12-3346
Cornus, a library, 21-5856
Cornus, William, poems: see Poetry Index
Cornus, costume of, 12-2245
Cornus, the universe, 12-3317
Cornus, of Russia, 12-3724, 3727-28
Cornus, fruit from, 2-650
 history of, 17-4406-07
Cornus, character in "Tartarin of Tarascon," 12-4220
Cornus, Augustus Jansoon, type-maker, 12-3608

Cornus, character in "Tartarin" 12-4220
Cornus, of Arabia, 12-3461
 of Balkans, 12-3461
 of Cairo, 12-3461
 of Central Asia, 12-3461
 of China, 1-117
 of colonial, 2-182
 of diver, 22-5215
 of doll, 12-4444
 of England, 2-771
 of Holland, 12-3542, 3545
 of Hungary, 21-5959
 of Indiana, 12-3576
 of Laplanders, 21-5461
 of Persia, 12-3891
 of Russia, 12-3799
 of Siberia, 12-3802
 of Sweden, 12-3660
 see also Fancy-dress
Cornus, Rapids, in St. Lawrence, 22-6123
Cornus, Peninsula, 2-3423
Cornus, in gymkhana, 2-2264
Cornus, a bird, 7-1757
Cornus, industries, for manufactures, 12-4801
Cornus, for Modeltown, 2-483
"Cornus Saturday Night", by Burns, 22-6041
Cornus, Rev. John, colonial minister, 12-3119
Cornus, and the Civil War, 7-1837, 2-2046-47,
 2052
 destroyed by insects, 12-3303
 early use of, 4-1042
 how it becomes cloth, 12-4885
 in Asia, 12-3924
 in Egypt, 12-4304, 4306
 in electric lamp, 2-668
 in France, 2-1430
 in Germany, 11-2766
 in Italy, 12-3086
 in Lancashire, 2-2350
 in Nova Scotia, 21-5544
 in Porto Rico, 2-2166
 in Queensland, 2-1872
 in Samoa, 2-2158
 in Southern states, 22-5958 1961
 in Switzerland, 12-2992
 in the South, 22-6074
 in West Indies, 22-6045, 6047
 piece of, 2-2336
 power-loom for, 12-4008
 production of, 2-2384
 United States manufactures of, 10-268,
Cornus, bell-weevil, destructive, 12-3201
Cornus, boll worm, destructive, 12-3203
Cornus, gin, invention of, 7-1837 11-2712
 12-4483 12-4885, 4887
Cornus, grass, a plant, 12-5091
Cornus, seed, value of, 2-2384
Cornus, seed-meal, as fertilizer, 10-2686
Cornus, thistle, a plant, 20-5229
Cornus, grass, a plant, 2-1240
Cornus, a cat, 22-5508
 and Bob Fraser, 22-6121
 see also Puma
Cornus, cause of, 2-6308
 value of, 7-1649-51
Cornus, of the animals, 2-1110
 of the Eastern Church, 12-3802
 see also Canada, councils in
Cornus, Fire: see Camp-Fire Girls
Cornus, of Canada: see Canada, council-
 lers of
Cornus, of coins, 2-1435, 1437 12-3045
Cornus, of Scarborough, ship, 12-3004
Cornus, out, twenty ways of, 2-1604
"Cornus of Monte Cristo", by Dumas, 12-4215,
 17-4431
Cornus, Slavonic, 12-3722
Cornus, Book of All: see Tables of Contents
Cornus, Robert of Paris, story of, 2-1495
Cornus, faithful, 11-2968
 how to hide in the open, 2-1299
 measuring area of, 20-5230
"Cornus Byways", by Jewett, 2-2101
Cornus, in colonies, 2-365
Cornus, a dance, 11-3805
"Cornus, by Brown, 2-2101
"Cornus of the Poles", by Jewett,
 2-2101
Cornus, of 1600s, 12-3888-84
Cornus, Madame de, tutor of Frederick the
 Great, 17-4549
Cornus, des Bois, French trapper, etc., 12-4831
"Cornus of the Poles", by Jewett, 12-4220
Cornus: see California, etc.

GENERAL INDEX

- Courting**, among birds: see **Birds of Beauty**
Courts, of Church, 18-4791-86
of Justice, 8-2086, 2070; 23-8105
of the U. S., 6-1437; see also **Supreme Court**
Senate sits as court, 8-1435
state, 6-1437
Courtyard, adventure of, in "Don Quixote," 4-903
Cousin (Jean), French sculptor, 16-4174
Couture (Thomas), and Hunt, 16-4221
Covenant, of Great Britain, 7-1858; 21-4825
Covenanters, in "Old Mortality," 7-1776
of Scotland, 7-1773
persecution of, 21-5625
story about, 6-1497
Coventry, acting-festivals at, 21-5580
Lady Godiva and, 20-5236
Coverdale, Miles, translator, 15-3942
Cow, a mammal, 3-672; 9-2350
and Chicago fire, 22-5825
as foster mother, 24-6244
food affects milk, 11-2828
milk of, 6-1587
of ants: see **Aphis**
rising of, 15-3945
sacred to Hindoos, 6-1638
way to draw, 22-5741
white, 11-2758
see also **Cattle**
Cowbane, poisonous plant, 16-4136; 19-4956
Cowbird, egg of, 7-face 1756, 1762; 8-1980
Cowboy, costume for, 20-5347
Cow-catcher, story of, 2-405
Cowpens, battle of, 4-1007-08
Cowper, William, English poet, 23-6031
hymns of, 8-2017-18
poems: see **Poetry Index**
Cowries, used as money, 6-1427
Cowslip, a plant, 16-4138; 18-4652, 4658, 20-5235
see also **Marsh-marigold**
Cow-vetch: see **Vetch**
Cow-wheat, a plant, 15-3892
Cox, Kenyon, American painter, 16-4254
Coxe, Bishop A. C., 12-3054
Coyote, life-history, 1-161
Coypu, an animal, 3-676, 680; 19-5072
Crab, a constellation, 10-2643, 2645
Crab, and her mother, 12-3096
crane and the, 16-4286
crustacean, 6-1421, 1426; 9-2350, 10-2611;
17-4492
fishing for, 15-3843
see also **Hermite-crab**, **Land-crab**
Crab-apple, European wild, 14-3529
Crackit, Toby, character in "Oliver Twist,"
10-3565
Cracow, taken by Poland, 11-2905
Craddock, Charles Egbert: see **Murfree, Mary N.**
Cradle, for gold-washing, 20-5320
for mowing, 11-2714
Indian, 1-16
Crain, Frank, his picture, "The Meeting House,"
22-5934
Crain, Dinah M. Mulock, English author,
10-2621, 2627; 15-3696
Craits, poisonous serpents, 6-1384
Cramps, of muscles, 17-4484
- use of, 8-1910
what causes, 15-4018
Cranberry, a fruit, 3-651; 16-4136; 19-5092
Crane, a bird, 8-1974, 1977-78; 9-2350
and the wise cat, 16-4286
wolf and the, 3-580
Crane (machinery), for big guns, 23-6152
"Cranford", by Gaskell, 10-2823
Cranmer (Thomas), archbishop of Canterbury,
4-859; 19-5094-96
Crassus, Roman consul, 20-5278, 5280
Crassus, Roman noble, 2-440
Cratchit, Bob, character in "Christmas Carol,"
9-3197
Cratchit Family, characters in "Christmas
Carol," 9-3202
Crater, central hole of volcano, 8-2083; 13-3251
of moon, 9-2207; 22-6215
Crawford, F. Marion, American writer, 18-4886
Crawford, Mrs., song-writer, 14-3771
Crawford, Thomas, American sculptor, 18-4686
Crawford Motel, in White Mountains, 2-820
Crayfish, armored water-animals, 10-2611,
2613-14; 21-5668
cave, of caves, 8-1305
Creakle, Miss, character in "David Copperfield,"
11-2862
Creakle, Mr., character in "David Copperfield,"
11-2862
Creakle, Mrs., character in "David Copperfield,"
11-2862
Cream, as food, 11-2721, 2829
formation of, 17-4273
in the stomach, 9-2865
microbes and, 4-821, 896
Creameries, in Canada, 22-5784
Cream-fondants, making, 15-3552
Cream-of-tartar, source of, 16-3386
Creation, and Babylon, 16-4867
comment on, 14-3664
"Creation", oratorio of Haydn, 13-3287, 3290
Creatures, work for all, 21-5640
Cressy: see **Cressy**
Creek Indian War, Jackson during, 9-785
Creeks, Indian tribe, 1-21; 6-1107; 6-1399
Creeks, frames, 13-4891
Creeper, brown, 12-3156
Creeper, method of climbing, 1-169
Creeper-Jenny, a plant, 16-4138
Crees, Indian tribe, 1-21; 16-2577; 11-2785;
18-4622; 23-8144
Creoles, of the South, 6-1621
origin of, 17-4514
Creon, king of Thebes, 2-476
Creon, tyrant, 2-497
Crescote, a shrub, 14-3625
Crescote, for preserving wood, 8-2008
Crescent, badge of Mohammedans, 6-1549
on Ottoman banner, 12-3191-92
Crescent City: see **New Orleans**
Cress, cultivation of, 1-280; 4-826; 16-2582;
12-3395; 13-3325; 16-4132, 4134
family of plants, 11-2884
Cressy, battle of, 8-772; 8-2072; 10-2594
guns used at, 6-1164
Crete, bull of, 12-3374
island of, 16-4626; 20-5200, 5202
see also **Minos**
Cretans, pottery of, 17-4519
Cretans, crossing, 22-6341
Crevices, crossing an Alpine, 12-2992
Crew, saved by boy, 14-3694
Crewel-stitch, in applique, 16-5030-31
Cribbing, in "Tom Brown's Schooldays,"
16-4142
Cricket, injurious insect, 16-3197-98
of Mammoth Cave, 2-1805
"Cricket on the Hearth", by Dickens, 9-2302
Cricket-wicket, problem concerning, 6-1606
Crilley, Frank, a diver, 24-8212
Crimes, history of the, 14-3723-29, 3769
Crimes, War of the, history, 9-569; 8-1118;
8-2290; 18-3823
Criminals, in Canada, 22-5942
trials of, 6-1437-38
Crimmer, a sheep, 16-5078
Crinkle-roots: see **Toothwort**
Crispin, St., story of, 4-1029
Cristobal, ship, 1-84
Croatia-Slavonia, province of Hungary, 11-2303
Croatan, message of Roanoke, 24-8275
Crochet, in music: see **Music**
Crochet-work, how to do, 5-1364
purse of, 16-4042
Crocodile, a reptile, 5-1269, 1215, 1217, 1221,
6-163; 22-5808; 24-6376
age of, 9-2349-50
anagram from, 19-5037, 5133
creation of, 14-3666
fossil, 11-2919
in "Peter Pan," 11-2390
leather from, 11-2833-34
Crofts, plants, 20-5230
treatment of, 3-617; 6-1602; 7-1728
Croesus, gold-legends about, 20-5218
king of Lydia, 8-1321; 11-2388; 20-5146;
21-5567; 23-5951
Crofts, Ernest, his picture of Napoleon, 12-3501
Croker, Thomas Crofton, Irish author, 6-1481
Crolius, Edwin A., swim for help, 11-3815
Cromarty, Sir Francis, character in "Round the
World," 19-4911
Cromwell, Oliver, and American colonies, 2-523
and Great Rebellion, 7-1856-57
and the Irish, 21-5556
English Protector, 2-523; 4-832, 1034, 1037-42;
7-1858-62, 1865-66, 18-4593, 4686-87
granddaughter of, 17-4452
puzzle-picture, 4-930
restored Maryland, 2-523
statue by Thornycroft, 16-4159
visits Mr. John Milton, picture of, 22-5679
watch of, 20-5173
Cromwell, Richard, son of Oliver, 4-1040; 7-1862

GENERAL INDEX

- Cromwell, Thomas**, favorite of Henry VIII, 4-858-59
- Crookes, Sir William**, and wheat, 11-2947
- Crop**, use of bird's, 9-2363
- Crops**, rotation of, 4-905
- Croquet**, English game, 17-4489-91
- Crosby, Frances Jane**, hymns of, 9-2016
- Cross**, and St. Bartholomew's Day, 9-2075
- Cross**, and wandering Jew, 9-800
- Crosses** for Eleanor, 3-770
- double**, 21-5656
- drawing crosses**, 8-1239
- emblem of Christianity**, 12-3191
- erected by Cartier**, 3-554
- nails of the**, 12-3078
- on flag of Denmark**, England, etc.: see Denmark, flag of, etc.
- on Union Jack**: see England, flag of
- red**, of Switzerland: see Red Cross
- relics of the Lord's**, and evil eye, 16-4240
- sculptured stone crosses**, 2-466
- the true**, 12-3188; 15-3858; 20-5384
- visions of the**, 2-542; 20-5384
- wood of the**, 14-3750
- see also** Crusades, Victoria-cross
- Cross-ball**, a game, 6-1603
- Cross-bearer**, family of plants, 16-4212; 20-5228
- see also** Cabbage-family
- Cross-bills**, and pine-cones, 21-5430
- Cross-fertilization**, of flowers: see Flowers, cross-fertilization of
- Cross-fish**, marine animal, 9-2412
- Cross-fox**, 19-5078
- see also** Fox, fur of
- Crossing-over**, dance-figure: see Dances
- Crossroads**, adventure at the, 4-901
- Cross-stitch**, for canvas, 21-6648
- Cross-trees**, of mast, 13-4613-10
- Croton-water-bug**, a cockroach, 12-3200
- Crouch, Mr. E. M.**, music by, 14-3771
- Crow**, a bird, 7-1901-02; 9-2344, 2350, 12-3156
- and the anklet**, 24-6292
- and the fox**, 2-504
- and the pitcher**, 13-3504
- egg of**, 7-face 1756
- see also** Carrion-crow, Fish-crow
- Crow**, constellation of the, 10-2639
- Crowbar**, action of, 14-3675
- Crow-blackbirds**: see Grackles
- Crows**, Byre, his picture of Jeremiah Horrocks, 7-1681
- Crowfoot**, Indian chief, 18-4622
- Crowfoot**: see Water-crowfoot
- Crowfoot-family**, of plants, 16-4210
- Crown**, Archimedes and the golden, 12-3150
- Crown**, Egyptian double, 18-4846
- for Olympic games**, 20-5301, 5205
- Goldlocks and the golden**, 19-5113
- iron**, 9-2288; 12-3078
- myrtle**, 7-1819
- Northern**: see Corona borealis
- oaken**, in "Faerie Queene," 3-702
- of England**, 5-1254
- of Llewellyn**, 3-770
- of Scotland**, 12-3135
- of St. Stephen**, 11-2896-97; 21-5654, 5658
- of the head**, 16-4200
- of the sun**: see Corona of the sun
- on a bush**, 4-855
- Crown-imperial**, a plant, 5-1249; 7-1738
- Crown-jewels**, of Russia, 15-3800
- Crown Point**, taken, 4-1000
- Crown-prince**, of Turkey, 12-3190
- Crow's-nest**, Norwegian fisherman's, 14-3657
- Crow's Nest Pass**, railway in, 9-2276
- Crowthier, Samuel**, negro bishop, 11-2942
- Croya**, seizure of, 1-132
- Croyles Island**, in St. Lawrence, 23-6123
- Crucible**, a melting-pot, 14-3647
- Crucible-steel**: see Steel, making
- Crucifixion**, caricature of, 22-5926
- Crusaty, Mr.**, character in "Pilgrim's Progress," 5-1183
- Cruisers**, naval, 23-6204
- "Crusiken Lawn"**, song, 14-3771
- Crummies, Vincent**, character in "Nicholas Nickleby," 10-2671
- Crusaders**, in Spain, 13-3340
- in "The Talisman"**, 6-1496
- travels of**, 4-856
- Crusades**, and Venice, 5-1167
- children's**, 6-1554
- fifth**, 6-1554
- first**, 6-1495
- fourth**, 6-1554; 12-3190
- Crusades**, France in the, 8-2070
- history of**, 3-594, 769; 12-3190-31; 15-3860; 22-6041, 4045
- in Switzerland**, 12-2986
- Jerusalem and**, 24-6334
- men of the**, 6-1549
- second**, 6-1553; 15-4032, 4037
- third**, 6-1553
- Crushers**, for sugar, 3-709
- Crust**, of bread, 11-2949
- of earth**: see Earth
- Crustaceans**, development of, 10-1511, 14-3665
- see also** Wood-lice
- Crying**, of animals, 20-5397
- value of**, 18-4814
- when hurt**, 2-390
- Crystalliser**, for sugar, 3-706
- Crystals**, and polarized light, 20-5241, 5216
- laws of**, 19-4877
- of snow**: see Snow, crystals of
- what they are**, 8-1317
- Csörbe Lake**, in Hungary, 21-5660
- Ctesiphon**, and Romans, 20-5155
- Cuba**, and School Republic, 24-6390
- and United States**, 8-3147, 2154; 9-2350
- and yellow fever**, 12-3202, 3235, 3237
- animals of**, 5-1213
- De Soto**, governor of, 2-274
- discovered**, 1-54
- explored**, 4-367
- fruit in**, 3-650
- history of**, 4-900; 12-3346
- island of**, 17-4396-97
- sugar in**, 3-708-09; 9-2386
- United States government of**, 13-3495
- war in**, 13-3494
- Cubes**, mysterious, 23-6170
- Cubs**, a geyser, 8-587
- Cucuracha slide**, from Culebra Mountain, 21-5596
- Cuckoo**, a bird, 7-face 1756; 8-1978, 1980, 2106, 13-3453-56
- and fools of Gotham**, 16-4126
- cobblers and the**, 9-2311, 2398
- see also** Mangrove-cuckoo
- Cuckoo-bread**: see Wood-sorrel
- Cuckoo-clocks**, in Germany, 11-2768
- Cuckoo-flower**, a plant, 18-4652, 4658
- Cuckoo-meat**: see Wood-sorrel
- Cuckoo-pit**, a flower, 13-4652-53
- Cuckoo's-nest**, a dance, 11-2805
- Cuckoo-spit**, an injurious insect, 12-3195
- Cucumber**, king of the cucumbers, 5-1358
- squirting**, 15-3813
- water in**, 5-1191-93
- Cucumber-root**, a plant, 12-3068
- Cuddie**, character in "Old Mortality," 7-1777
- Cudgel**, a game, 14-3642
- Cuff**, embroidered, 21-5645
- Culebra Cut**, and Panama Canal, 17-4405; 21-5594
- Culebra Mountain**, slides from, 21-5596
- "Cullet"**, in glass-making, 8-1264
- Gullogen**, battle of, 14-3770
- Cultivator**, a machine, 16-4147
- Culver**, wireless station at, 14-face 3573, 3574
- Cumberland**, history of, 3-592
- Cumberland**, ship, 8-20-8-49
- Cummins, Judge David O.**, father of Maria, 8-2098
- Cummins, Maria Susanna**, American writer, 8-2098
- Cumnor Hall**, story of, 15-3880
- Cumulo-nimbus**, clouds, 14-3682
- Cumulo-stratus**, clouds, 14-3682
- Cumulus clouds**, 14-3682
- Cunens**, a monk, 8-2163
- Cunaxa**, battle of, 19-5114; 20-5152
- Cunningham**, explored Australia, 2-366
- Cunningham, Allan**, poems: see Poetry Index
- Cunny Rabbit**, and the lion, 2-502
- "Cuore"**, Italian book, 19-4992
- Cup**, horn-cup: see Fairy-horn
- making a paper**, 21-5528
- of poisonous mushroom**, 19-4882
- wetness on outside of**, 12-3150
- Cup-and-ball**, home-made, 23-6170
- Cup and saucer**, china, 17-4539
- Cupid**, and Psyche, 7-1909
- see also** Garden of the Loves
- Curaca**, Peruvian judge, 17-4508
- Curacao**, a liqueur, 23-6048
- Curacao**, island of, 23-6048
- Curahod**, Suzanne, and Gibbon, 19-4728
- Curculio**, injurious insect, 12-3204

GENERAL INDEX

Card, fat of salmon, 10-2700
of milk, 11-2828; 17-4585
Curie (Pierre), found radium, 2-648
Curiosity, instinct of, 20-5188
Curius Dentatus, refused bribe, 8-2020
Curlews, birds, 8-1978-79; 9-2341
Curling, a sport, 20-5222
Currants, fruit, 3-660; 16-4136
trade of Greece, 13-3240
Zante, 3-650
Currency-laws, revised, 13-3495
Currents, caused by heat, 16-4231
of air, 4-1082-83; see also Wind
of electricity, 14-3678; 20-5355
problem concerning, 3-624
what they mean, 6-1449
Currier Belli see Brontë, Charlotte
Curtain, for model stage, 18-4823
for window, 20-5351
Curtis, Dr. M. A., studied mushrooms, 19-4882
Curtiss, Glenn H., air-craft and flights of, 1-176, 181
Curtius, Lake, origin of, 9-2315
Curve, of baseball, 20-5250
Curves, of a boomerang, 13-3514
of human backbone, 10-2467
railway, 15-4019
Curzon, Lord, and tiger, 1-159
Cusons, an animal, 4-376, 378
Cushion-cover, made of plaited ribbons, 13-3441
Cushions, Egyptian elbow, 18-4844
Cusli see Pachacuti
Custer, General George A., massacre of, 13-3493
Custis, Martha, married George Washington, 3-780
Custom House, in New York, 19-5006, 5008
in Venice; see Dogana
Customs-union, in Europe, 10-2597
Cæstrin, Frederick the Great at, 17-4551
Cute, Alderman, character in "The Chimes," 9-2299
Cuthbert, scholar of Bede, 17-4452
Cutlery, manufacture of, 18-4801-03
Cutter, a boat, 16-3960
Cutter, a machine, 14-3647
Cuttings, rooting of, 5-1363
Cuttle, Captain, character in "Dombey and Son," 10-2588
Cuttlefish, development of, 14-3665
fight with, in "Tollers of the Sea," 16-4225
food of, narwhal, 4-1074
mistaken for kraken, 1-220
sea-molluscs, 10-2481, 2483-85, 2611
Cuvier, Georges see Cuvier, L. C. F. D.
Cuvier, Leopold C. F. D., French naturalist and paleontologist, 4-865-66, 869, 872
Cuxhaven, German port, 11-2764
Cusco, Inca capital, 17-4508-09, 4512
18-4608-09
Cyane, ship, 12-3006
Cyzares, king of Medes, 20-5145
Cycle, of Nature, 9-2293
of solar system, 9-2293
of sunspots, 8-2092
problem concerning, 3-736
Cyclones, cause of, 10-2536; 23-5990
see also Whirlwinds
Cyclops, race of giants, 1-75; 19-5040
Cydnus River, in Asia Minor, 22-5788
Cylinders, clay, 13-3479; 13-4959-60, 4965
writing on, 13-3479; 13-3909
Cylinders, for postage, 13-3411
for talking-machines and dictaphones, 21-5602, 5605
in locks, 24-6362
of elevator, 23-6199
of locomotive, 2-304
Gymnat, character in "Faerie Queene," 3-701
"Gymbeline", by Shakespeare, 21-5588
Gymnastics, character in "Faerie Queene" 3-700
Gymrie, Celtic language, 2-477
Gyral, what is, 23-6217
Gyparissus, the stag of, 22-5775
Gypress, a tree, 9-2387; 14-3524; 23-5960
use of, 20-5352
why a symbol of mourning, 22-5775
Gypripedium see Lady's slipper
Cyprus, island of, 12-3198; 20-5200, 5202
Cyrl, St., Greek monk, 11-2902; 13-3482
Cyrus, the Great, and Croesus, 21-5567
Persian ruler, 20-5145, 5153; 24-6333
tomb of, 20-5154
Cyrus, the Younger, and Greeks, 19-5114; 20-5152
Czar, and Moscow, 18-3802

Czar, character in "Land of Youth," 8-2061
driven from throne, 6-1434
meaning of, 14-3723
Czardas, Hungarian dance, 21-5660
Czechs, of Bohemia, 11-2836, 2900

D

Dacia, Roman province, 2-540
Dacians, European people, 20-5282
Dacres, Captain, commander Guerrière, 12-3007
Daffodil, a plant, 1-249; 3-617; 6-1602; 7-1738; 18-1199; 18-4654; 20-5280
family of the, 18-4136
of paper, 18-4199
Daffydowndil; see Daffodil
Dagger, and Burke, 18-4159
Dagger-moth, mimicry of, 13-3451
Daguerre, Louis J. M., and camera, 20-5135
Dagyr, John A., shoemaker, 12-3102
Dahlgren Hall, at Annapolis, 18-4742-43
Dahlia, a plant, 4-844; 6-1519; 7-1853; 14-3786; 18-4136
Dahomey, in Africa, 18-4308
Dalingerfield, Elliott, American painter, 18-4258
Dairy-barn, view of, 5-1142
Dairy-farming, European, 14-3658, 3660
in Nova Scotia, 21-5544
Dairyman, prosecution of, 18-3829
Daisy, Solomon, character in "Barnaby Rudge," 11-2777
Daisy, as badge, 4-855
drawing and painting, 11-2926
flower of, 18-4016, 18-4132, 4136
foretells husbands, 18-4208
Land of the Red Daisies, 3-721
Michaelmas; see Michaelmas-daisies
ox-eye, 18-4204
sleep of daisies, 5-1283
state flower, 22-5816
"Daisy-chain", by Yonge, 10-2627
Dakin, Dr. Henry D., treatment of wounds, 24-6369
Dakotas, family of Indians, 7-1841
Dalai Lama, high priest, 15-3927, 3932
Dale, Sir Thomas, at Jamestown, 2-522
Dalscarlia, in Sweden, 14-3660
Dalgetty, Sir Donald, in "Legend of Montrose," 6-1497
Dalhousie, Lord, governor-general of Canada, 3-759
Dallas, city in Texas, 23-5962, 5968
Dallenwil, Swiss town, 22-5847
Dalmatia, and Austria, 11-2896
Dalon (Jules), French sculptor, 16-4174
Dalton, John, English chemist, 6-1418, 1447, 7-1694
Dalton, fox farms of, 19-5078
Dam, across Mississippi, 23-6070
built by glaciers, 1-14
for irrigation, 21-5415
for water-reservoirs, 8-2119
of beaver, 3-676; 21-5574
of the Erie Canal, 18-4770
see also Assuan Dam, Sweetwater, etc.
Damascus, Arab named, 21-5415
Syrian city, 18-3858, 3860
waters of, 23-6105
Dame Dreary, in story of Merrymind, 17-4414
Dame Fertelot, a hen, 2-494
Dame-school; see Schools, in colonies
Dame's-Violet, a flower, 20-5238
Damian, Sir, in "The Betrothed," 6-1496
Damien (de Venster), Father (Joseph), and lepers, 1-71; 8-2150
"Damnation of Faust", by Berlioz, 13-3293
Damon and Pythias, friendship of, 3-634
Dampier, William, pirate, visited Australia, 2-364; 6-1367
Dampier Land, in Australia, 6-1367
Dampness, and sea-weed, 20-5174
danger of, 13-3384
effects of, 15-3911; 18-4689
Dana, Richard H., "Before the Mast," 24-6235
Danaë, mother of Perseus, 4-1051
Danby, Lord Treasurer, and Marvell, 18-4599
Dances, bean-setting dance, 13-3323
in colonies, 4-985
of Indians, 24-6274
taught children, 12-3224
warning to dancers, 9-2315
see also Morris-dances
Dancing Bear, a rock, 8-1312

GENERAL INDEX

- Dancing Girl**, a statue, 18-4666
Dandelion, a plant, 15-4016; 16-4132, 4136, 4206-07
 seeds of, 16-3813, 3891
Dandenong Mountains, 6-1375
Danelaw, part of England, 2-470, 18-4791
Danes, and sugar, 3-707
Dane and cup of cold water, 2-476
 defeated by Britain, 17-4364
 in Canada, 22-5916
 in England, 2-464-65, 468; 4-856; 5-1253;
 14-3652
 in Ireland, 21-5552
 king of; see Hicardred, Hrothgar
 name of, 14-3652, 3654
"Dansbury House," by Wood, 10-2624
Dane's Island, in arctic, 21-5160
Danforth, character in "Man Without a Coun-
 try," 21-5619
Dangerous, Castle, heroine of, 7-1673
Danlarm, character in "Count of Monte
 Cristo," 16-4315; 17-4431
Daniel, prophet, 24-6332
 story of, 19-1969-70; 20-5148
Danish West India Company, organization of,
 23-6048
Dannie, character in "Partners," 1-139
Dan Russell, a fox, 2-495
Dante Alighieri, Botticelli's illustrations for
 work of, 18-5102
 Italian poet, 12-3080; 20-5307-08
 portrait by Giotto, 11-2738
Dante's, Edmond, character in "Count of
 Monte Cristo," 16-4315, 17-4431
Danton, and Fabre, 14-3773
Danton (Georges Jacques), and French Revolu-
 tion, 5-1188; 16-4099, 4108
Danube River, in Europe, 10-2594; 11-2769,
 13-3210, 21-5652, 5658
 nations along, 10-2575
 plain of the lower, 12-3185
 settlements on, 12-3076
 the importance of, 11-2896
 see also Balkan Peninsula
Danzig, German port, 11-2761
Dapple, in "Don Quixote," 4-901, 967
Dardanelles, straits of the, 12-3190
 see also Hellespont
Dardanus, son of Electra, 13-3371
Dare, Ananias, father of Virginia, 24-6274
Dare, Eleanor W., mother of Virginia,
 24-6274
Dare, Virginia, born in America, 4-959,
 24-6274
Daria, meaning of, 15-3924
Dariel Pass, military road over, 15-3802
Darien, Isthmus of, history, 2-271; 17-1164
 see also Panama
Darius, the Mede, 7-1819
Darius I, the Great, king of Persia, 7-1714;
 20-5145-47
Darius II, king of Persia and Egypt, 20-5119,
 5152
Darius III, king of Persia, 5-1323, 1326, 20-5147,
 5151
Darjeeling, Indian town, 14-3683
Dark (complexion), why are some people, 1-167
 see also Black
"Dark and Bloody Grounds," see Kentucky
Dark Continent: see Africa
Darkness, before dawn, 16-4277
 fear of the, 11-2736
 hat of, 4-1052
 seeing in the, 1-163
 sleep in the, 5-1284
 why it is, 3-612
Darley (Felix O. C.), drawing of "March to the
 Sea," 8-2055
Darling, Grace, cause of death, 7-1804
 heroism of, 7-1742
Darling, John Napoleon, character in "Peter
 Pan," 11-2887
Darling, Michael Nicholas, character in "Peter
 Pan," 11-2887
Darling, Mister, character in "Peter Pan,"
 11-2887
Darling, Wendy Moira Angela, character in
 "Peter Pan," 11-2887
Darling River, discovered, 2-366
Darnay, Charles, character in "Tale of Two
 Cities," 10-2461
Darning, lessons in, 14-3555
Darnley, Lord, married Mary, Queen of Scots,
 4-860, 862, 12-3132, 3142
Darters, birds, 8-1970-71; 9-2340
Dartmouth College, history of, 17-4568
Darwin, Charles, and partridge, 9-2214
 and seeds carried by birds, 15-3890
 and the flower, 17-4527
 as a thinker, 19-5083
 comments of, 11-2915; 13-3250; 16-4093, 4115
 English scientist, 4-864-65, 867, 869-70, 921
 studies of earthworms, 13-3297, 3299
Darwin, Francis, and root-growth, 15-3906
Darwin, Sir George, comments of, 9-2211;
 19-4874
 English astronomer, 9-2294; 17-4374
Dash, a dog, 24-6326
Dashwood, Sir George, character in "Charles
 O'Malley," 12-2975
Dashwood, Lucy, character in "Charles
 O'Malley," 12-2975
Daskam, Josephine Dodge: see Bacon, Jose-
 phine D.
Dasyure, an animal, 4-876-79
Date-palms, in Egypt, 23-6185
 many uses of, 3-651, 656; 23-6102
 marriage of, 23-6102
 sugar from, 3-face 702
Dates, for eggs, 13-3324
 of Arabia, etc, 15-3858; 23-6102
 stuffed, 5-1251
 where grown, 3-650-51, 656
 with fondant, 5-1251
Date-stones, games with, 23-6102
Daturas, plants, 17-4565
Daudet, Alphonse, French writer, 18-4639;
 20-5316
Daughter, Karl's, 5-1356
Dauphin, French: see Charles VII
David, St., day of, 22-5816
David (king of Israel), and Hiram, 20-5202
 and Hiram, 22-5915
 statues of, 16-4173, 19-5104
 story of, 16-4173, 6330
David I, king of Scots, 12-3134
David II, kin" of Scots, 12-3138
"David Copperfield," by Dickens, 9-2326,
 10-2459, 11-2861
Da Vinci, Leonardo, Italian painter, 17-4590,
 4593
Davis, Jefferson, as president of the Confed-
 eracy, 8-2044-45, 2054, 17-4461
 house of, 23-5959
Davis, John, voyage of, 2-281, 21-5457
Davis' Birthday, celebration of, 17-4463, 4467
Davison, and Queen Elizabeth, 9-frontis
Davits, of a ship, 13-4620
Davy, Sir Humphrey, and electric-flame, 8-2167
 and nitrous oxide, 18-4632
 and telegraph, 17-4441-42
 befriended Faraday, 8-2167
 inventor, 3-664, 667
 safety-lamp of, 5-1246; 7-1889; 16-4309;
 22-5809
Dawkins, John, character in "Oliver Twist,"
 10-2564
Dawlish, legend of, 8-1995
Dawn, darkest before, 16-4277
Dawson, ran steamer, 10-2492
Dawson, Sally, in story, 20-5180
Dawson City, in Yukon Territory, 8-1916
 police post, 18-4621-22
Day-camp, for children, 12-3222
Daye, Stephen, and Bay Psalm Book, 12-3049
Day-fly: see May-fly
Day-lily, various kinds of, 20-5230
Days, are there two at once, 3-687
 beginning of, 3-687
 length of, 1-39, 43; 9-2295
 names of, 1-91, 2-466
 of planets, 14-3780
 units of time, 14-3672
 we celebrate, 17-4463
 what they are, 1-86
 see also Hundred Days
Dead, Egyptian, 18-4846
 Indian customs relating to, 10-2578-79
 land of the, 7-1908
 queen of the, 7-1908
Dead Letter Office, for badly addressed letters,
 13-3410
"Dead Man Restored to Life," a picture,
 18-4218
Dead-nettle, plant, 15-3893; 17-4354-56
Dead Sea, in Mammoth Cave, 5-1309
 in Palestine, 8-2011; 18-3126; 15-3856;
 22-5814-15
"Dead Selvas," by Magruder, 8-2103
Deaf-and-dumb, education of, 17-4447
 talking to, 20-6251

[illegible]

GENERAL INDEX

- Disk**, what it is, 6-1430
Disk-thrower: see Discobolus
Dislocations, treatment of, 17-4382-83
Dispersion, of the Jews, 24-6334
Displacement, of things in water, 12-3150; 15-3825
Disraeli (Benjamin), anagram of name, 19-5037
 prime minister of England, 24-6335-36
Distance, how can we judge, 7-1653
 in a picture, 7-1654
 problem concerning, 3-624
 smallest measured, 22-5814
Distemper: see under Painting
District of Columbia, flower of, 22-5815
 history, 8-2042; 12-3492
 holidays in, 17-4466, 4470
 midshipmen from, 18-4742
Dive, rising from a, 16-4276
Diver, accident to, 9-2250
 boots of, 14-3778
 dress of, 1-191
 for pearls, 1-190, 191
 for sponges, 16-4265, 4267-68
 of Torbay, 13-3296
 work of, 14-3773; 24-6311, 6313
Diver, Great Northern: see Loon
Diveria, river in Europe, 24-6360
Dividend, in arithmetic, 13-3378
"Divine Comedy" written by Dante, 20-5310
Diving, how to learn, 15-3897
Division, by factors, 13-3167
Divisor, in arithmetic, 13-3378
"Dixie", by Emmett, 12-3051
Dizziness, cause of, 9-2247
Dnieper River, of Russia, 14-3721, 3724
Dniester, frontier on, 12-3194
Doasyouwouldbedoneby, Mrs., character in "Water Babies," 15-3830
Dobsina, ice-cave at, 21-5657, 5660
Dock, giant or water, 19-4950, 4952
Dock-laborer, by Meunier, 16-4174
Docks, dry: see Dry-docks
Dockyards, Czar Peter worked in, 14-1734
 in England, 4-1013
"Doctor", by Connor, 16-4327
Doctor, brave deed of, 1-258
 first woman, 12-3123
 in "Canterbury Tales," 15-3939
 native African, 7-1780
 problem concerning, 5-1104
 world's great doctors, 18-4627
 see also Medicine-men
Doctor Syntax, a rock, 5-1311
Dodders, parasitic plants, 15-3892, 3894
Dodge, Mary Mapes, poems see Poetry Index
Dodge, Mister, married Mary Mapes, 8-2100
Dodger, The Artful, character in "Oliver Twist," 10-2562
Dodgson, Charles Lutwidge, wrote "Alice in Wonderland," 6-1476
Dodo, character in "Alice in Wonderland," 11-2958
Dodo, extinct bird, 1-53; 6-1502, 1508, 23-6002
Dodson, character in "Pickwick Papers," 10-2469
Dog, age of, 9-2350
 among Indians, 20-5335
 and leopard, 22-5806
 and the ass, 11-2893
 and the farmer, 21-5568
 and the shadow, 3-580
 and the wolf, 8-1991
 as draft animal, 2-287; 8-2149; 11-2767; 15-3797, 4061; 24-6324
 as foster-mother, 24-6242
 attack on cat, 22-5889
 backbone of, 10-2467
 brain of the, 14-3689, 3691
 called unclean, 23-6133
 casts coat, 9-2350
 character in "Blue Bird," 22-5836
 dogs that became friends, 21-5565
 effect on cows, 11-2828
 for Polar work, 21-5461, 5463-64
 hunts truffles, 19-4882
 in mosaic, 23-6223
 in the manger, 20-5288
 intelligence of, 19-4998; 21-5505, 5511-12
 kennel for, 19-5127
 killed by Harvard students, 4-962
 knows stranger, 5-1163
 nursing wolf-cubs, 21-5661
 of the wood, 20-5182
 paintings of dogs, 24-6323
Dog, poisoned by cave-air, 7-1804
 prairie, see Prairie-dog
 rabies, a disease of, 10-2470
 reasoning power, of, 22-5812
 shadow-picture, 20-5353
 simple way to draw, 8-2034
 stuffed, 12-3117, 24-6319
 swan and the puppy, 24-6290, 6340
 sweat-glands of, 8-1924
 tears of, 20-5397
 that came home again, 18-4365
 that knew his master, 15-4051
 that remembered Odysseus, 16-4280
 thief and the, 15-3878
 turning round of, 18-4690
 two-headed, 20-5186
 various kinds of, 2-506-12; 24-6318
 wild, 1-157, 162
 see also Cerberus, Great Dog, Little Dog
Dogana, Venetian custom-house, 5-1171
Dogberry, Shakespearian character, 3-564
Dog-daisy, a plant, 16-4136
Doges, of Venice, 5-1167; 12-3079-80
 palace of, 5-1166-67, 1169-70, 1172-73, 12-3080
Dogfish, a shark, 10-2470-80
Dog-ribs, Indian tube, 11-2785
Dog-rose, a plant, 16-4134
Dog-salmon, a fish, 10-2703; 15-3954
Dogs, Cave of, 7-1803
Dog-sledges, for furs, 19-5070, 5075
Dogstail, a glass, 5-1343
Dog-star: see Sirius
Dog-tooth Violet: see Adder's-tongue
Dogwood, a tree, 17-1560-61, 21-5473
 flowers, 17-1556
Dolly, of hair-pin work, 17-4496
Doll, bead bracelets and necklaces for, 8-2033
 bonnet for, 16-1199
 children's fondness for, 23-6216
 Christmas lamp, 8-2137, 9-2269
 clothes-pin dolls, 17-1195
 Egyptian, 18-4814
 furniture for, 7-1733, 1850
 garments for: see Workbasket, what to do with a girl's
 house for, 8-2031
 making Red Riding Hood, 2-387
 of many nations, 13-3434
 parental instinct for, 20-5191
Dollie, Miss, and Captain Blue, 19-5107
Dollman, J. C., his picture of apes, 22-5684
Dolores, Spanish doll, 13-4334, 4336
Dolphin, a constellation, 10-2613
Dolphin, a sea-animal, 4-1067, 1073-74, 10-2182, 2484, 2607
Domby, Florence, character in "Domby & Son," 9-2320, 10-2566
Domby, Mrs., character in "Domby & Son," 10-2566
Domby, Paul, character in "Domby & Son," 10-2566
"Domby & Son," by Dickens, 10-2459, 2566
Dome, city with the golden, 9-2362
 mammoth, 5-1309
 of Florence Cathedral, 11-2794
Domesday-book, preparation of, 2-473
Domett, Alfred, poems: see Poetry Index
Dominic, St., Spanish priest, 15-1029, 4034
Dominica, island of, 23-6013
Dominican Republic, of West Indies, 23-6011
Dominic, character in "Guy Mannering," 6-1626
Dominion Day, in Canada, 17-1463
Dominion of Canada: see Canada
Dominions, of British Empire, 5-1120
Dominoes, games played with, 15-4044
Domitian, emperor of Rome, 2-539
Donatello, Italian sculptor, 5-1172, 11-247, 2791, 16-4173, 4176, 4179
Don-Cossacks, 14-3728
 see also Cossacks of Russia
"Don Giovanni", by Mozart, 13-3290
Donizetti (Gastano), composer, 13-3294
Don John, Shakespearian character, 3-564
Don John: see John of Austria
Donkey, and baby, 21-5663
 and devil, 16-4240
 and thistle, 10-2473
 as draft animal, 2-289-90; 23-6066
 as lord of the house, 10-2636
 communication with pony, 21-5511
 of Father Christmas, 9-2185
 poet, goblin and, 9-2403
 putting on tail, 19-5035
 shadow-picture, 20-5353

GENERAL INDEX

- Donkey**, skins for leather, 11-2834
wish of, 9-2404
- Donnacoma**, Indian chief, 3-554
- Donne, Dr. John**, poems: see Poetry Index
- Don Pedro**, Shakespearean character, 3-563
- "Don Quixote"**, adventures of, by Cervantes, 4-901, 967; 20-5311
- Don Quixote**, and La Mancha, 13-3344
- Don River**, of Russia, 14-3721
- "Don't give up the ship"**, phrase, 12-3009-10
- "Don't Tread on Me"**: see United States, flag of
- Doo-doo**, a dog, 23-6026
- Door**, bronze, of Rogers, 7-1685
of Florence Cathedral, 11-2797
of safety vaults, 24-6360
writing on the church, 10-2523
- Doorn, Earl**, in story of Geraint and Enid, 8-1991
- Dorcas**, who clothed the poor, 17-4450
- Dorchester**, people settled Windsor, Conn., 2-532
- Doré, Paul G.**, picture of Cyrus and Jews, 20-5153
- Dorians**, Greek tribe, 20-5202, 5208
- Dories**, of fishermen, 10-2602; 24-6293
- Dormouse**, an animal, 3-806-07
character in "Alice in Wonderland," 12-3092, 3162
- Dorrit, Amy**, character in "Little Dorrit," 10-2461
- Dorrit, Frederick**, character in "Little Dorrit," 10-2461
- Doryphoros**, by Polykleitos, 16-4172
- Dostoyevsky, Mikhailovitch**, Russian writer, 20-5314
- Dot**, character in "Cricket on the Hearth," 9-2302
- Dottheboys Hall**, in "Nicholas Nickleby," 10-2669
- Dots**, on plants, 16-4135
- Double-eye**, a fish, 10-2707-08
- Doublet**, a variety of gem, 24-6379
- Doublets**, a game, 12-2995
- Doudney, Sarah**, poems: see Poetry Index
- Dough**, for modelling, 9-2269
- Dougherty, Paul**, American painter, 16-4258
- Doughnuts**, of Dutch, 22-5834
- Doughty, Thomas**, American artist, 16-4219, 4220, 4252
periscope of, 22-5860
- "Douglas," and "Annie Laurie"**, 14-3769
- Douglas, Edwin**, painting of, 23-6065
- Douglas, Lord James**, and heart of Bruce, 12-3138
- Douglas, Katherine**: see Kate Barlows, of the Broken Arm
- Dobglas, Stephen A.**, American politician, 9-2044, 10-2441, 2443; 13-3492
and Kansas-Nebraska Bill, 8-2013
debates with Lincoln, 3-786
- Douglas, The Perilous Castle of**: see Castle Dangerous
- Dookhobors**, in Canada, 22-5944
- Doulton, Henry**, English potter, 17-4540
- Douro**, river in Iberian Peninsula, 13-3338, 3343
- Donsterswivel**, character in "Antiquary," 7-1669
- Donvres Rocks**, in "Toilers of the Sea," 16-4225
- Dove**, a bird, 9-2217-19; see also Ring-dove
and the ant, 20-5288
and the Ark, 19-4968
Carolina, 9-2342
the mourning, 7-1762
- Dover**, chalky rocks at, 11-2918
harbor at, 16-4246
- Dover, Straits of**, cable under, 18-4697
- Dovetails**, form of joints, 5-1361
- Dowel**, a wood-joint, 6-1521; 24-6279
- Dower-chests**, from Europe, 23-6177
- Down**, of elder-duck, 22-5762
of seeds, 15-3813
- Downie, Captain**, and battle of Lake Champlain, 12-3010
- Downs**: see Football
- Downy**, a woodpecker, 12-2154
- Drachenfels**, Castle of, 16-4239
legend of, 16-4235
- Drag-nets**, used by Scott expedition, 21-5461
- Dragon**, a constellation, 10-2659, 2641, 2643
- Dragon**, and Beowulf, 13-3503
Chinese, 1-217
fight with the, 23-6192
flying, 6-3813; 11-2919
- Dragon**, guarding the Golden Fleece, 1-204
in "Faerie Queene," 3-697-98
of Briton king, 4-855
of Hesperides, 20-5186
St. George and the, 1-219; 4-978
winged, 1-216
- Dragonet**, a fish, 10-face 2600
- Dragon-fly**, an insect, 12-3194; 16-4262
value of, 13-3299, 3302
- Dragons**, pigeons, 9-2217, 2219
- Dragon's Cave**: see Drachenfels
- Dragon-ships**, of Norse, 2-273
- "Dragon's Teeth"**, authorship of, 6-1481
- Drainage**, of Jack's house: see Jack, house of
- Drake, Captain**, character in "Westward Ho!" 14-3714
- Drake, Colonel Edwin L.**, and oil, 3-669, 16-4166
- Drake, Sir Francis**, and colony of Roanoke, 24-6272
English naval hero, 2-275, 280, 4-862, 7-1846; 17-4512; 21-5464
- Drake, Joseph Rodman**, poems: see Poetry Index
- Drake**, ship, 13-3001
- Draper, Herbert**, his picture of a child, 14-3696
- Draper, John W.**, and photography, 20-5135
- Draught**, making, 16-4113
use of forced, 14-3776
- Draught**, of a ship, 18-4619
- Draughts**: see Checkers
- Drave River**, in Europe, 11-2898; 21-5658
- Drawers-in**, of warp, 19-4892
- Drawing**, difficult trick in, 23-6170
drawing a plain envelope, 2-460
drawing straight lines, 5-1239
looking at what you draw, 23-6008
making first, 1-266
pictures of leaves and twigs, 3-744
school lesson, 1-266, 2-459; 3-744, 5-1239; 6-1471, 7-1729; 8-1950; 9-2232, 2375; 11-2926; 12-3172, 13-3334, 3380, 3470
- Drawing-game**, of dominoes, 15-4044
- Drayhorse**, origin of, 23-6066
- Drayton, Michael**, comments on Robin Hood, 15-3940
English poet, 21-5488
poems, see Poetry Index
- "Dream of Gerontius"**, by Elgar, 13-3291
- Dreams**, cause of, 2-389; 6-1690, 11-2733
Indian faith in, 11-2781
of animals, 17-4188
recollection of, 13-3386
seeing ourselves in, 20-5397
- "Dred," by Stowe**, 6-2096
- Dredges**, for the sea-bottom, 14-3774
- Dredging-machine**, condemned by Galileo, 7-1679
- Dred Scott Decision**, and slavery, 8-2013, 13-3492
- Dregs**, sunk, 12-3150
- Dresden**, battle of, 17-4368
capital of Saxony, 10-2596; 11-2763-64
- Dresden-china**, making of, 11-2763; 17-4540
- Dribbling**, in hockey, 19-5027
- Drift**, gravel-bed, 11-2919
- Drift-men**: see Cave-men
- Drift-nets**: see Nets, for fish
- Drill**, multiple, 17-4457
used in aqueduct, 20-5137
- Drink**, the black, 17-4565
- Drinker-moth**, an insect, 12-3015
- Drinking-fountain**, for fowls, 18-4711
- Drinking-horns**, of Norsemen, 14-3654
- Dritschn, Andrew**, and Gutenberg, 14-3609
- Drive**, elective, 10-2498
- Driver, Captain Stephen**, and Old Glory, 21-5494
- Driver**, a golf-club, 12-3211
- Driver-ants**, raids of, 11-2974
- Driving-match**, in gymkhana, 9-2264
- Drogheda**, Ireland, and Cromwell, 7-1859
- Dromio**, two, Shakespearean characters, 3-638
- Drones**, among bees, 11-2858
- Drops**, what they are, 3-613
- Droptails**, plants, 19-4951-52
- Drowning**, rising three times before, 9-2250
saving the, 5-1362
treatment for cases of, 19-5125
- Drug-habits**, breaking, 20-5291
- Drugs**, in United States, 10-2686
that control sweating, 8-1824
- Draids**, ancient priests, 1-210
and Stonehenge, 19-5039
in Switzerland, 12-2984
priests of Ireland, 21-5551
religion of, 8-2067
- Drum**, a broken, 16-4294

GENERAL INDEX

- Drum**, of Indians, 11-2781-82
of telephone, 13-4230
of the ear, 13-3912, 3915
revolving, 11-2825
- Drumming**, of ruffed grouse, 12-3151
- Drummond, William Henry**, poems: see Poetry Index
- Drupes**, form of fruit, 20-5216
- Dry-cupping**, for pain, 6-1589
- Dryden, John**, English poet, 23-6029
poems: see Poetry Index
- Dry-docks**, journals of, 10-2498
- Drygalski, Professor von**, Antarctic explorer, 21-5459
- Dry-heat**, of engine, 2-305
- Drypenny**, character in story, 7-1904
- Duarte**, king of Portugal, 13-3340
- Dubhe**, a star, 10-2639-41, 2645
- Dublin, Ireland**, history of, 21-5552
metropolis of Ireland, 3-667, 773
scenes in, 21-5556
- Dublin Castle**, home of Irish Government, 21-5551
- Dubois, Paul**, French sculptor, 16-4174
- Du Challa, Paul E.**, African traveler, 12-3130
- Duchess**, character in "Alice in Wonderland," 11-2956, 12-3089
- Duchies**: see Austria, Duchies of, Germany, Duchies of, etc.
- Duck**, in balloon, 22-5810
nest of, 22-5752; see also Elder-duck
never gets wet, 1-165
problem concerning, 4-941
under the water, 10-2589
varieties of, 6-1557, 1563-64, 9-2340
- Duckbill**, of Australia, 23-6000
see also Platypus, duck-billed
- Duckling**, swimming of, 5-1161
the ugly, 7-1708
- Duck-mote**, 4-873
see also Platypus, duck-billed
- Duck-weeds**, aquatic plants, 7-1739
- Ducts**, of glands, 23-6014
- Dudley, Lord Robert**: see Leicester, Earl of
- Duels**, of aviators, 1-179
- Duessa**, character of "Faerie Queene," 3-698
- "Dust"**, picture by Stone, 23-6037
- Du Fay, F. C. de C.**, French scientist, 2-2163
- Dufferin, Lord**, governor of Canada, 5-1281
- Dufferin Bridge**, in Ottawa, 9-2272
- Dufferin Terrace**, of Quebec, 1-222
- Dugong**, an animal, 4-1067, 1073-74
- Du Guesclin, Bertrand**, Constable of France, 11-2816
- Dukes**, leaders of Normandy, 2-472
- Dulcimer**, musical instrument, 5-1087
- Dulcinea del Toboso**, character in "Don Quixote," 4-902-04, 967
- Duma**, of Russia, 15-3906
- Dumas, Alexandre**, French novelist, 16-4315; 17-4431; 20-5307, 5313
- Dumas (Jean B. A.)**, French scientist, 18-4633; 24-6364
- Dumb-bells**, exercises with, 5-1301
of folded paper, 18-4825
- Dumbness**, cause of, 10-2472
see also Deaf-and-dumb
- Dumb-nettles**: see Dead-nettles
- Dummies**, in moving pictures, 20-5143
- Duna**: see Danube River
- Dunbar**, battle of, 4-1037, 7-1862
- Duncan**, king of Scotland, 12-3133
- Duncan, Mrs. Mary Lundy**, poems: see Poetry Index
- Dunce**, costume for, 20-5346
- "Dunce-stool"**, a punishment, 4-962
- "Dunciad"**, by Pope, 23-6031
- Dundas, Lord**, had steam tow-boat, 10-2486, 2490
- Dunedin**, in New Zealand, 6-1486, 1490, 1492
- Dungl**, king of Babylon, 19-4970
- "Dunk-a-doo"**: see Bittern
- Dunkirk**, cold to Charles II, 4-1042
- Dunlop, J. B.**, and rubber-tires, 22-5794
- Dunsinane**, Castle of, 8-1299
march of the woods to, 13-3508
- Dunstan, St.**, Archbishop of Canterbury, 18-4791, 4796
- Dupleix, François**, attacked British in India, 7-1718
- Duran, Carolus**, and Sargent, 16-4250
- Durand, A. B.**, American painter, 16-4220-22, 4252
- Durande**, ship in "Tollers of the Sea," 16-4223
- Duras**, ship, 12-3004
- Durenstein**, Castle of, 23-6194
- Dürer, Albert**, German artist, 5-1176-77
- Durham (John G. L.)**, Lord, governor-general of Canada, 3-759; 8-1271
- Durham**, town in North Carolina, 23-5958
- D'Urville**, in Antarctic, 21-5464
- Dusseldorf**, art centre, 16-4220
- Dust**, clouds of, in "Don Quixote," 4-972
cosmic, 10-2541, 2547; 16-4086
in eye, 13-3440
in locked house, 18-4815
meteoric, 14-3677
specks of, 9-2330
where does it go? 12-3046
- Dustin, Mrs. (Mannah)**, captured by Indians, 4-891
- Dutch**, and Philippines, 8-2152
family made of cork, 2-486
in America, 4-893
in Brazil, 20-5368
in Connecticut, 2-532
in India, 7-1716
in New World, 2-282, 528; 4-893; 16-4078
in South Africa, 16-4080
in South America, 18-4603; 23-6047
in West Indies, 23-6043, 6048
visit Australia, 2-363; 6-1367
see also Holland
- Dutch Guiana**, colony of, 18-4603
- Dutchman's Breeches**, a flower, 11-2876, 2879
- Dutch West India Company**, organization of, 23-6043
- Duty**, import, 8-1391
- Dvořák, wife of O'Rourke**, 21-5554
- Dwarf**, Black, 8-1497
character in "Faerie Queene," 3-697
cunning farmer and the, 18-4860
in story, 8-1988
king of the dwarfs, 18-4859
Snowdrop and the dwarfs, 8-2059
yellow, 4-1062, 6-1478
- Dwina River**, discovery of, 21-5456
- Dyce, William**, his picture of Herbert, 8-2015
- Dyer**, in "Canterbury Tales," 15-3939
- Dyes**, and submarine, 22-5861
fading of, 17-4586
from coal-tar, 2-416
in Germany, 11-2768
in United States, 10-2686
made from coal-tar, 10-2539
mordant for, 13-3386
of wood, 16-4132
purple dye of Phenicians, 20-5200
see also Butternut-brown
- Dye-woods**, South American, 23-6047
- Dying Lion**, a statue, 18-4672
- Dykes**, of Denmark, 14-3651
of Holland, 7-1797; 14-3540, 3546-47, 3593
- Dynamic**, science of motion, 14-3592
- Dynamometer**, for testing strength, 22-5778
- Dynamos**, Edison and, 24-6351

E

- E**, verse describing letter, 13-3433
- Eagle**, a bird of prey, 7-1892, 1897; 9-2342; 2349-50, 12-3153
and the tortoise, 12-3096
and the wren, 9-2403
cat and sow, 18-4867
egg of, 7-face 1760
nest of, 22-5752
on canal boats, 18-4768
young of, 21-5664
- Eagle**, a constellation, 10-2641
- Eagle**, heraldic, 7-1658, 14-3728
on flags, 7-1658
on standard, 3-794, 9-2292
- Eagle**, ship, 22-5857
- Eagle-girl**, of the mountains, 3-724
- Eagle-owl**, a bird, 7-1901-02
- Eagle Rock**, in Yellowstone Park, 3-566
- Eagle-Tower**, of Lathom House, 18-4746
- Eakins, Thomas**, American painter, 16-4252
- Ear**, and balance, 7-1886, 15-4000
and hearing, 7-1855, 15-3910, 3914
bleeding from, 18-4929
cutting off ears, 6-1438; 7-1747
development of, 15-4000
diagrams of, 15-3912
dislodging something in, 13-3440
movement of, 15-4000
of fish, 7-1886
of frog, 1-165
of insects, 12-3198

GENERAL INDEX

- Ear**, of porpoise, 4-1074
of rabbit, 23-6084
pricking of, 15-3914
sensations of, 11-2800
tubes of the, 24-6234
- Ear-ache**, cause of, 1-167; 15-3915
- Ear-drum**, and vibrations, 21-5601
- Earl's Court**, wheel at, 11-2803
- Early, General (Jubal A.)**, during Civil War, 8-2054
- Earselitz**, in "The Black Dwarf," 6-1497
- Ear-rings**, do not affect eyes, 14-3780
- Earth**, affected by sun spots, 8-2090
air, fire and water, 4-955
and stars, 14-3571
as a moon, 12-3044
as magnet, 8-2167; 17-4482; 20-5294
as seen from moon, 9-2209, 2211
atmosphere of, 14-3681
attraction of: see Gravitation, effects of
big ball we live on, 1-1
brilliance of, 11-2802
changes of, 12-3031, 14-3571, 3573
cooling of, 6-1416; 9-2247
crust of, 2-125, 429, 3-567, 617, 11-2913;
12-3033; 13-3249
death of, 20-5168
density of, 8-2088, 9-2215
distance from sun, 8-2088, 22-5891
does not obstruct other worlds, 12-3149
early theories about, 1-208; 8-1962
effect of quakes and shakes on, 14-3781
falling of the, 4-1086
fire in centre of, 4-1081, 5-1094; 13-3507
from the moon, 17-4377
heat of, 1-185; 3-568, 645, 6-1413, 1116, 14-3571
hollowness of, 9-2215
how conquered by man, 3-613
how made, 2-321, 4-851
life of, 1-185, 16-4143, 18-4812
light of, 13-3384; 16-4112
moon part of, 9-2211
movement of, 1-85, 5-1161; 6-1586, 1591, 1592
names of, 9-2249
previous state of, 13-3508
pull of the: see Gravitation
radiation from, 16-4311
reflects light, 7-1656
shadow of, 7-1880, 1883, see also Moon, eclipse
of
shape of the, 12-3031; 13-3507
shaping of, 2-425
shrinkage of, 14-3568, 3573; 17-4586
size of, 7-1681, 9-2389
spinning of, 1-43, 2-432, 3-612, 687, 693-94,
9-2295, 10-2536, 12-3044, 3047, 3226, 14-3672,
16-4116, 4232, 19-4873, 4875, 20-5175, 23-5990
studied by Lyell, 4-868
stuff in earth and air change places, 5-1160
vibration of, 13-3429
weight of, 5-1160
why not burned up? 6-1417
wobbles upon axis, 9-2293
- Earthhog**: see Aardvark
- Earthquakes**, and sea-water, 13-3506
cause of, 1-85, 3-567, 9-2246, 18-4694
effect on earth, 14-3781
history of, 13-3251-54
in Chile, 20-5386
in South, 13-3494
information from, 11-2913, 2920
- Earth-shakes**, explanation of, 14-3781
- Earth, Story of the**: see Tables of Contents
- Earth-tremors**, registered, 18-4694
- Earth-worm**, and geophilus, 13-3357
usefulness of, 13-3297-99
- Ear-trumpet**, reflection of sounds, 17-4582
use of, 15-3910
- Earwigs**, injurious insects, 6-1519; 9-2337;
12-3198-99, 3204
- Ease**, a plain in "Pilgrim's Progress," 5-1183
- East**, character in "Tom Brown's Schooldays,"
16-4140
- East Anglia**, subdivision of England, 2-465
- Easter**, date of, 22-5896
- Easter-eggs**, how to make, 9-2257; 13-3324
- Eastern Church**, fasts of, 15-3798
- Eastern Forest Reserve**, and Crawford Notch,
2-520
- Eastern Rumania**, and Bulgaria, 13-3212
- East Florida**: see Florida, history
- Easthampton**, town of, 12-3048
- East India Companies**, founded, 14-3546
- East Indians**, in South America, 18-4603
- East Indies**, and Holland, 14-3548
- East Indies**, and Philip II, 22-5850
animals of, 3-627-28
insects of, 13-3449
named, 1-7
nuts of, 8-1998
sugar in, 3-703
- East Jersey**, part of New Jersey, 2-529
- "East Lynne"**, by Wood, 10-2624
- Eastman**, George, and film, 20-5136
- East Mark**: see Austria
- East Prussia**, taken from Poland, 11-2905
- East Reich**: see Austria
- East River**, in New York, 1-25; 20-5198; 22-5754
- Eating**, and health, 9-2363
times for, 12-3179
see also Mouth, and eating
- Eaton, Wyatt**, American painter, 16-4252
- Eau-de-Cologne**, disappearance of, 10-2588
- Eaves-swallow**, bird, 7-1762; 9-2216, 13-3461
- Ebernberg**, castle of, 18-4236
- Ebers**, Georg, German writer, 23-5951
- Ebonite**: see Vulcanite
- Ebony**, German, 18-5034
how to know, 18-5034
in New Guinea, 8-1492
pear-wood imitates, 14-3529
- Ebro River**, in Spain, 13-3337-38, 3340
- Ecbatana**, city of the Medes, 20-5148
- Echidna**, an animal, 4-874-75, 1016; 14-3668
home of, 21-5577
- Echo**, cause of, 4-1083, 17-4581; 19-5024
in Mammoth Cave, 5-1308
- Echo River**, in cave, 5-1307-08
- Eclipses**: see Sun, eclipse of, Moon, eclipse of
- Ecuador**, cacao in, 9-2252
explored, 4-867
history of, 17-4514; 18-4603-04
scenes in, 18-4605
- Eddy, Asa Gilbert**, married Mary Glover, 12-3122
- Eddy, Mary Baker**, and Christian Science, 12-3121
- Eddystone Lighthouse**, 3-750
- Eden**, Garden of, and the Euphrates, 15-3855
in "Paradise Lost," 22-5678
- Edentates**, group of mammals, 14-3668
- Edessa**, and the Crusades, 6-1552
- Edfu**, Temple of, 18-4852
- Edgar**, king of Scots, 12-3134
- Edgar**, Shakespearean character, 3-642
- Edgar**, the Atheling, king of England, 12-3133
- Edgar**, the Peasebloss, king of England, 2-472,
3-590; 18-4789, 4791
- Edgar, Sir James**, poems: see Poetry Index
- Edge**, of coin, 14-3648
- Edgeworth, Sir John**, wife's heroism, 4-1065
- Edgeworth, Lady**, and the tallow dip, 4-1065
- Edgeworth, Maria**, English writer, 4-1065;
10-2619, 2621, 19-4945
- Edgeworth, Richard**, and Maria Edgeworth,
10-2621
- Edinburgh**, Scottish city, 2-466; 9-2321; 12-3135
monuments of, 19-5048
- Edinburgh Review**, Macaulay in, 18-4734
- Edison, Thomas A.**, American inventor, 2-336,
3-668; 11-2718; 17-4441, 4445; 19-4999,
20-5136, 5140, 5143; 24-6348-49
and electric transportation, 24-6357
and talking machine, 21-5602
- Edith**, Reine du Wessex, 15-4055
- Edith, Lady**, in "The Tallman," 6-1496
- Edith, Queen**, 9-2316
- Editors**, of school paper, 18-4819
- Edmonton**, capital of Alberta, 1-232; 9-2273;
18-4836; 21-5607, 5612
parliament building in, 22-5940
see also Canada, railways and canals
- Edmonton House**, Father Lacombe at, 23-6141
- Edmund**, Shakespearean character, 3-642
- Education**, and Jews, 24-6338
compulsory in Bulgaria, 13-3245
in Canada, 5-1274, 1277, 1281; 21-5401
in France, 9-2423, 2426
in Philippines, 8-2158
in South America, 17-4512, 4514
in Switzerland, 12-2992
in United States, 10-2690
rules of, 20-5306
see also South America, Republics of
- Education, Minister of**, in Canada, 21-5403
- Edward**, character in "Count of Monte Cristo,"
17-4438
- Edward I**, king of England, and Crusades,
6-1555; 15-3860
and Great Tom, 6-1538
crowned at Westminster, 18-4682

GENERAL INDEX

- Edward I.**, executed Wallace, 1-126
 reign of, 1-128; 3-596, 769-77; 4-1035; 12-3135
 with troops, puzzle-picture, 4-930
- Edward II.**, king of England, and barons, 12-3138
 and sturgeon, 10-2601
 reign of, 3-770-71; 4-832
 treasure stolen, 18-4885
- Edward III.**, king of England, and Calais, 18-4181; 21-5533
 and Castilian expedition, 11-2816
 and Chaucer, 15-3934
 and cross of St. George, 9-2354
 and John of Bohemia, 11-2902
 and John of Montford, 10-2508
 reign of, 3-770; 8-2072
 used guns, 5-1164
- Edward IV.**, king of England, death of, 8-1992
 reign of, 3-776
 sons of, 18-4683
 visiting Caxton, 14-3613
- Edward V.**, king of England, in the Tower, 8-1992-93; 18-4685
- Edward VI.**, king of England, at marriage of Amy Robsart, 15-3880
 reign of, 4-859
 saved sister, Queen Elizabeth, 13-3296
- Edward VII.**, king of England, Abbey's picture of coronation, 16-4210
 and Canadian Mounted Police, 18-4621
 reign of, 5-1120
- Edward, the Black Prince**, of England, 3-772; 8-2072, 10-2816
- Edward the Confessor**, king of England, founded Westminster Abbey, 3-590, 595, 18-4681
 heir of, 12-3133
 reign of, 2-465, 472; 5-1253
 shrine of, 3-769-70
- Edwards, William**, bridgebuilder, 1-23
- Edwin**, king of England, 2-466, 470
- "Edwin Drood,"** by Dickens, 10-2462
- Eel**, and fools of Gotham, 16-4126
 electric, 4-867, 10-2481, face 2600
 habits of, 10-2699
 various, 10-2481-83
 see also Conger-eel, Murena
- Egbert**, king of Wessex, overlord, 2-466, 468; 8-2068
- Egeus**, a courtier, 2-327
- Egfrid**, king of Northumberland and Hexham, 18-4794
- Egg**, and equilibrium, 15-3885
 and fan: see Race, egg and fan
 as food, 11-2829, 13-3275
 bad egg floats, 7-1885
 bird and touched, 21-5639
 blowing the, 22-5919
 breaking eggs, 18-4694
 breathing of, 4-914
 chocolate, 9-2257
 cooking of, 10-2578
 does not roll off, 7-1614-46
 Easter: see Easter-eggs
 effect of boiling on, 21-5513
 found in Pompeii, 23-6228
 golden, 12-3208
 good one sinks, 7-1885
 goose and the golden, 15-3878
 hard when boiled, 6-1588
 in story of forbidden room, 7-1699
 in the United States, 10-2678
 making an, 7-1885
 of a plant: see Seeds
 of amphibians, 6-1215
 of bees: see Bees
 of birds, 7-face 1756, 1760, face 1760
 of crabs, 10-2612
 of different colors, 7-1796
 of fish: see Fish, Gold-fish
 of insects: see Ants, Aphides, Butterflies, Insects, etc.
 of mammals, 14-3668
 of silkworms, 7-1824-25, 1829
 of turtles, 11-2918
 or-hen, priority of, 22-5892
 problem about, 1-256
 puzzle about, 1-110
 shell for boat, 15-3900
 size of, and young, 12-3012
 smell of rotten, 6-1586
 stones so-called, 6-1603
 story of Lilliputian, in "Gulliver's Travels," 5-1337
 use of, 6-1558
 water in, 5-1193-94
- Egg**, white of, 12-3234
 yolk of, 11-2828
 see also Auk, Birds, Duckbill, etc.
- Egg-hat**, a game, 6-1603
- Eglamour**, Shakespearian character, 3-640
- Egmont, Count Lamoral d'**, of the Netherlands, 14-3549; 20-5225
- Egmont**, mountain in New Zealand, 6-1488
- Egret**, a bird, 8-1971, 1974; 9-2338-39, 2341
 eggs of, 7-face 1756
- Egypt**, ancient surgery in, 18-4626
 and astrology, 8-1959-61
 animals in, 2-290, 512-13; 4-1014
 Arabs in, 15-3858
 battle-signs of, 7-1657
 birds of, 6-1559, 1561, 1564; 7-1895, 1898; 8-1973, 1976
 cotton in, 9-2384; 19-4885
 fossils of, 14-3667
 fruit from, 3-651
 gems of, 24-6379, 6381, 6383
 glass and, 5-1263
 gold in, 20-5318
 great sights of, 23-6179
 history of, 2-297, 442; 4-865, 867; 5-1325-26; 19-4957-58, 4961, 4966, 20-5202
 lotus-flower in, 13-3380
 mamelukes in, 11-2910
 Mohammedan school in, 23-6103
 monasteries of, 15-4030
 monuments of, 19-5039-40, 5042, 5044
 musical instruments of, 5-1087
 Napoleon in, 9-2286, 17-4362, 4364
 Persians in, 20-5146, 5148, 5152-54
 pictures of, 13-3481
 plague in, 5-1207
 plants of, 13-3510
 sacred beetle of, 13-3303, 3306-07
 Saracens in, 6-1553
 sculpture of, 16-4171
 serpents of, 6-1382-83
 slave dynasty in, 11-2938, 2940
 story of, 16-1297-4300, 4307, 18-4841; 23-5951
 sugar-market in, 3-707
 surveying in, 23-6083
 water-supply of, 21-5416
 writing in, 3-688, 13-3479, 3481-82, 3484
 see also Cleopatra
- "Egyptian Princess,"** by Ebers, 23-5951
- Egyptians**, and astronomy, 7-1675
 and Sirius, 13-3373
 and stars, 10-2637
 draft animals of, 23-6068
 eat with fingers, 18-4801
 lock of, 24-6358
 pottery of, 17-4539
 spoons of, 18-4805
 stature of, 11-2735
 writing of, 13-3480
- "Egyptian Singer,"** by Ford, 16-4174
- Eider-ducks**, down of, 6-1563, 1566; 22-5752
- Eidophone**, device for picturing voice, 16-4092
- Eiffel Tower**, in Paris, 21-5534, 5540-41
- Elger**, Swiss mountain, 22-5846
- "Eight Balls,"** picture by Home, 16-4248
- "Eight Cousins,"** by Alcott, 8-2099
- Elaine**, Lily Maid of Astolat, 5-1199
- Elamites**, Asiatic people, 19-4960, 4962, 4966; 20-5148
- Eland**, an antelope, 2-411, 412; 24-6240, 6244
- Elastic**, stretching of, 23-5995
- Elasticity**, cause of, 22-5891
 explanation of, 4-921
- Elba Island**, gems from, 24-6382
 in "Count of Monte Cristo," 16-4316
 Napoleon and, 2-360; 3-792; 5-1112; 9-2289, 2292; 10-2594, 17-4368
- Elbe Canal**, in Germany, 10-2566
- Elbe River**, bridge over, 1-34
 in Europe, 10-2560, 2594, 2596, 11-2764, 2900
- Elbow-joint**, dislocation of, 17-4383
 fracture of the, 15-4289
 of the arm, 10-2571
- Elbrus Mountains**, in Persia, 15-3802, 3856, 3924
- Elder**, Mrs. Lilla T., poems: see Poetry Index
- Elder-tree**, European, 14-3535
 flowers of, 15-4016
 legend of, 8-1995
- El Dorado**, fabled country, 23-6042, 6047
- Eleanor**, of Aquitaine, queen of England, 3-592
- Eleanor**, of Castile, queen of England, 3-769-70
- Eleanor, Queen**, crowned at Westminster, 18-4682

GENERAL INDEX

- Election Day**, Presidential, celebration of, 17-4463
- Elections**, in Canada, 6-1454
- Electors**, of Brandenburg, the Palatinate, etc.: see Brandenburg, Palatinate, etc.
- Electors**, of Hanover, 10-2596
- Electoral Commission**, and Tilden-Hayes dispute, 13-3493
- Electors Palatine**, married sister of Charles I, 7-1865
- Electors**, of United States President and Vice-President, 8-1436, 1438
- Electra**, a Pleiade, 13-3374
- Electricity**, and copper, 10-2678
- and fires, 22-5762
- and fog, 12-3144
- and glass, 22-5889
- and light, 11-2799
- and magnetism, 20-5355
- and motor-cars, 7-1787
- and Northern Lights, 20-5294
- and plant-growth, 14-2679
- and radium, 5-1319
- and soured milk, 15-4022
- and telegraph, 14-3575
- and water-power, 10-2682
- as power, 5-1190
- battery, 5-1099
- causes thunder and lightning, 3-813; 6-1589; 13-3389
- conduction of, by metals, 5-1318
- conductors and non-conductors of, 22-5889
- effects of, 11-2800
- forces things through skin, 8-1983
- generation of, 11-2715; 24-6852
- Hertzian waves of, 17-4448
- in fishes, 10-2481-82
- in lamps, 14-3678
- made at home, 8-2141
- men who found, 8-2161
- name of, 3-688
- nature of, 4-1020
- of animals, 3-677
- on railroads, 10-2688
- splits up water, 5-1244
- trick with, 1-106
- two kinds, 6-1569
- use of for lights, 3-664, 667
- waves of, 6-1450; 20-5244
- why it kills, 14-3678
- see also Magnets, etc.
- Electro-magnet**, and telegraph, 14-3575
- improvement of, 8-2169
- making an, 10-2585
- Electro-magnetism**, 8-2167
- Electron**, Greek name for amber, 6-1450; 8-2162; 20-5355
- Electrons**, and aurora borealis, 20-5299
- likeness of, 20-5396
- make up atoms, 4-1020; 6-1450, 1568
- of the sun, 8-2094; 17-4586
- seeing, 13-4880
- what they are, 20-5357
- Electro-plating**, process of, 18-4807
- Elegy**, form of poetry, 2-369
- "**Elegy in a Country Churchyard**," by Gray, 4-898; 21-5449
- Elements**, compounds of the, 7-1693
- making of the, 8-1447
- most important, 5-1313
- radio-active, 16-4312
- what they are, 4-853, 955; 6-1417
- Elephant**, age of, 3-2349-50
- an animal, 2-290; 3-671, 805; 4-1011-12, 1015; 6-1631
- and Africa, 18-4297
- and man, 22-5800, 5805
- and master, 12-8373
- and moon, 24-6292
- capture of, 24-6241, 6243, 6245-47
- crossed the Alps, 12-2989
- drinking, 7-1719
- fossil, 11-2919; 14-3667
- in battle, 20-5274-75
- intelligence of, 21-5568
- leather from skin, 11-2834
- lessons of, 21-5565-66
- lost tusk, 11-2917
- made at dinner table, 8-2267
- outlaw, 22-5806
- prehistoric, 1-50
- royalty on, 7-1712
- shadow-picture, 20-5358
- Elephant-disk**, habits of, 12-2857
- Elephant-tortoise**, hibernation of, 24-6371
- Elevators**, development of, 12-2716; 22-6197
- for grain, 8-1138; 22-5611, 5614
- of aeroplanes, 1-177
- Eliland**, king of, 19-5119
- Elgar**, Sir Edward, musician, 12-2294
- Elgin** (James Bruce), Earl of, Governor of Canada, 5-1274, 1281
- Elgin** (Thomas Bruce), Earl of, and Parthenon, 3-610
- Elgin Marbles**, Canova and, 19-5103
- Ell**, and Samuel, 24-6323
- Ellas**, character in "Cloister and the Hearth," 18-4069
- "**Ellah**," oratorio, 12-3290, 3292
- Ellodorus**, and the fairies, 10-2636
- Elliott**, Bennett or Benedict, father of John, 23-6114
- Elliott**, George, English author, 10-2621, 2626
- Elliott**, Henrietta Hobbs, poems: see Poetry Index
- Elliott**, John, apostle to the Indians, 22-6114
- Elliott**, Sir John, English Parliamentarian, 4-1038; 7-1862, 1864, 1866
- Ellis**, king of: see Augæus
- Elissa**, character in "Faerie Queene," 3-699
- Eliziri** see Life, elixir of
- Elizabeth**, czarina of Russia, reign of, 14-3726
- Elizabeth**, empress of Austria, and Maria Theresa, 17-4554
- Elizabeth**, of Valois, married Philip II, 22-5850
- Elizabeth**, princess, daughter of James I, married Frederick, elector, 20-2558
- Elizabeth**, princess of Brunswick-Bevern, wife of Frederick the Great, 17-4552
- Elizabeth**, queen of England, and opal, 4-832
- and French ambassador, 4-857
- and Leicester, 15-3881
- and Mary, queen of Scots, 12-3122, 3142
- and Netherlands, 22-5850
- and Persia, 15-3862
- and Philip II, 22-5850
- and Raleigh, 16-4078; 21-5408; 24-6271
- and Roman Catholics, 19-5093
- and Russia, 14-3724
- and Shakespeare, 21-5582, 5586
- and Sir Philip Sidney, 2-475
- and stockings, 4-1042
- and Swiss cantons, 12-2988
- ate with fingers, 12-4801
- character in "Kenilworth," 6-1496
- founded East India Company, 14-3546
- helped Dutch patriots, 14-3546
- letters of, 15-3800
- played on spinet, 5-1088
- reign of, 4-859-62
- ring and Essex, 24-6381
- saved by brother, 13-3296
- sent embassy to India, 7-1715
- signing death-warrant, 12-frontis.
- Elizabeth**, queen of England, widow of Edward IV, 18-4684
- Elizabeth**, queen of England, wife of Henry VII, 4-855
- Elizabeth**, queen of Rumania, 12-3240
- Elizabeth**, W. J., college at, 17-4533
- Elk**, fossil Irish, 11-2919
- kind of deer, 2-412
- Ellangowan**, in "Guy Mannering," 3-1626
- Ellen**, Lady, daughter of King Arthur, 19-5119
- Ellerton**, John, hymns of, 3-2015
- Ellie**, character in "Water Babies," 15-3236
- Elliot**, Charlotte, hymns of, 3-2016
- Elliot**, Ebenezer, 5-1153
- Eclipse**, path of planets, 2-2389
- Ellis** Bell: see Brontë, Emily
- Ellis Island**, immigrant station, 12-3221
- Elm**, a tree, 20-5336; 21-5438
- and Washington, 4-1000
- European, 12-3260
- flowers of, 11-2877
- in Canada, 14-3733
- use of, 20-5352
- Elma**, character in "Lohengrin," 21-5561
- Elma**, fishing boat, 2-1855
- Elmore**, castle of, 2-449
- "**El Sombrero de Tres Picos**," by Alarcón, 20-5316
- Elves**, and the cobbler, 2-725
- Elv**, island of, camp on, 1-128
- Elvot**, Sir Thomas, wrote "Governour," 21-5562
- Elvian** fields, 1-78
- Elvra**, wing-sheaths of insects, 12-3440
- Emancipation Group**, a statue, 22-1663

GENERAL INDEX

- Emancipation Proclamation, and slavery, 2-727;**
 2-2050
 Lincoln reading, 2-2040
Embargo Act, of United States, 12-3490
Embarkation, of the Pilgrims, 7-1636
"Embarkation, for the Island of Cythara," pic-
ture by Watteau, 17-4521, 4598
Embroidery, English, 21-5545
 in Switzerland, 12-3292
 of Bulgaria, 12-3242
 of Persia, 12-3262
 see also Needlework
Emelya, romance of the Lady, 2-497
Emerald, a precious stone, 24-6277-78, 6380
 in Ecuador, 12-4604
Emerald Lake, in Canada, 22-5776
Emerald Palace, 4-1052
Emerson, Edward, brother of R. Waldo, 6-1613
Emerson, Ralph Waldo, American philosopher,
 and Alcotts, 2-2099
 bust of, 12-4567
 children of, 2-2099
 life of, 6-1612; 12-4155, 4159, 4162
 poems, see Poetry Index
 writings of, 4-999; 12-2050
Emerson, Rev. William, father of R. Waldo,
 6-1613
Emery-paper, what it is, 12-3230
Emilia, for poisons, 12-5082
Emirets, Indian king, 2-498
"Emile," by Rousseau, 20-5212
Emilia, Shakespearean character, 2-444
Emilia, Prince, of Hesse-Darmstadt, and sol-
 diers, 12-4026
Emily, character in "David Copperfield,"
 11-2864
Emilia Pascha, rescued by Stanley, 2-302
Emma, queen of England, reign of, 2-472
Emmanuel's Land, in "Pilgrim's Progress,"
 8-1129
Emma Willard School, in Troy, 12-3118, 3120
Emmerson, Henry H., his painting of dead sheep-
 herd and his dogs, 24-6323
Emmett, Daniel Decatur, songs of, 12-3051
Emmett, Lydia F., American painter, 12-4258
Emotion, and spasms, 17-4484
 feelings, 20-5187
Emperors, butterflies and moths, 12-3020
Emperors, Eastern, of Rome, 12-3074
 emperor and his new clothes, 14-3705
 emperor and his servant, a story, 5-1202
 emperor and the figs, 12-4991
 Flavian, of Rome, 2-539
 Hall of the, 21-5542
 Holy Roman, 10-2594
 Western, of Rome, 12-3074
Empire, British, 12-4077
 Byzantine: see Byzantium
 Holy Roman: see Holy Roman Empire
 Roman, 10-2596
 Sassanians: see Persia, rise and fall of
 see also France, Rome, empire of
Empire Day, in Canada, 17-4468
Empire of Eternal Sun, 12-4077
Empress of China, ship, 22-5781
Empress of India, reason for title, 7-1720
Emu, German river, 10-2550
Emu, a bird, 6-1376, 1804, 1507-08
Emulation, made by bile, 2-2367
 what it is, 2-2251
En, meaning of, 2-215
Enamel, of china, 12-4600
 of tooth, 2-2477, 2079
Enchanted Ground, in "Pilgrim's Progress,"
 8-1125
Encyclopaedia, meaning of, 2-215
 of 13th century, 2-596
Encyclopaedia, for children's, 10-4293
Endeavour, ship, 6-1434-36, 1492
Ende, Edward, picture of Shakespeare and
 Elizabeth, 21-5583
Endicott, John, settled at Salem, 2-526
End-organs, of nerves, 10-2650
"Endymion," Keats, 7-1688
Energy, degradation and dissipation of, 17-4392
 end of, 22-5292
 in nitrogen-compounds, 12-3251,
 in walking up hill, 12-3519
 kinetic, 12-3522
 laws of conservation of, 12-3430; 14-3592;
 16-4212; 17-4390
 of grass, 12-3903
 of position, 17-4394
 potential, 12-3522, 2776
 radiant, 20-5108
Enfant, qui crieit "Au loup," 21-5522
Enfants, dans la Forêt, 20-5192
Engelberg, Swiss town, 22-5217
Engins, by night, 2-302
 Diesel engines, 10-2466
 fire and water drive the, 2-304-05
 first engines, 2-302
 for fire fighting, 22-5757, 5761, 5762
 for gasoline, 12-3712
 how steam drives, 2-1522
 internal combustion of, 12-2492
 invention of, 2-300
 of aeroplane, 1-174
 of battleships, 22-6210
 of Papin, 10-2468
 see also Jack, house of, Locomotive
Engineer, locomotive, 2-316
 problem concerning, 2-1104
England, alcohol and children in, 21-5440
 and American Civil War, 2-2046, 2049
 and Berlin Treaty, 12-3242
 and Crimean War, 2-2296
 and football, 24-6277
 and Hermann, 10-2550
 and New Amsterdam, 2-529
 and Northmen, 14-2652, 2654
 and Pope Innocent III, 12-5098
 and Russia, 14-2723, 2728
 and Spain, 12-3241
 and Trent affair, 2-2048
 and Venezuela boundary, 12-3494
 animal representing, 2-2351
 animals of, 2-306, 308; 4-1012; see also Great
 Britain, animals in, etc.
 apostles in, 2-2352
 art in, 12-4173-74
 attacked by Zeppelins, 1-174
 beginning of freedom, 2-589
 birds of, 2-1559-60; 7-1892; 2-2212, 2218; see
 also Birds
 called John Bull, 2-2351
 Christianity in, 10-2550
 climate of, 12-4213
 cutlery in, 12-4801, 4802
 Czar Peter in, 14-3784
 diseases in, 11-2801-02
 during Civil War, 2-2052
 during Seven Years' War, 17-4555
 earthquakes in, 12-4694
 end of a long struggle, 5-1112-13
 fighting for the crown, 2-769
 first men in, 22-6017
 flag of, 4-1043; 5-1116, 1239; 2-2254; 21-5492;
 see also Flag, Standard
 flowers of, 20-5234
 founding of the nation, 2-465
 fruit in, 2-649
 gold and, 12-4111
 grasses of, 5-1343, 1245, 1348
 gravitation in, 12-3226
 history of, 1-127; 2-538-41; 5-1153; 12-4111;
 see also English History, puzzle-pictures
 from, London
 in battle of Navarino, 2-3240
 in India, 7-1716; 12-4078
 in New World, 2-272, 279, 282; 3-556-57;
 4-393, 900
 in the long ago, 1-205
 insects of, 12-3306
 Jews in, 24-6236
 legend of English people, 14-3622
 lighthouses of, 2-751
 men of the Great Rebellion, 7-1857
 mistress of the seas, 2-1395
 name of, 2-2351; 17-4370
 Napoleon and, 17-4366
 Parliament of, 2-596, 768, 773; 4-856, 858-59,
 900, 995, 998, 1034, 1043; 5-1114, 1120;
 7-1857; 12-4078; 12-4744, 4746
 patron saint of, 4-978
 poetry in, 2-477
 power of ruler, 2-1434
 printing in, 12-3610, 3618
 reformation in, 12-5093
 relations with France, 2-2426
 Royal Standard of, 12-3186
 rubber introduced to, 22-5793
 ruler of, 17-4384
 serpents of, 2-1384
 settlements of free cities, 10-2554
 silkworms in, 7-1829
 times of the Stuarts, 4-1035
 times of the Tudors, 4-856
 took Gibraltar, 12-3862

GENERAL INDEX

- England**, Tories return to, 9-1390
 Union Jack of, 9-2354
 war with China, 8-2018
 war with France, 3-556, 559; 4-993; 6-1394-96;
 9-2286; 12-3140; see also Hundred Years' War
 war with Spain, 2-280; 24-6274
 wars of, 13-3344; 14-3547
 wheat in, 5-1132; 11-2947
- English**, Dr. Thomas Dunn, wrote "Ben Bolt,"
 12-3054
- English**, in Canada, 24-6346
- English Channel**, cliffs of, 12-3033
 crossed by aircraft, 1-176; 22-5810
 crossed by shell, 23-6146
 did not exist, 8-2067
 in Europe, 1-208; 5-1115; 9-2288, 2415
 Webb swam across, 16-4314
- English History**, puzzle-pictures from, 4-930
- English Language**, first book printed in,
 14-3612
 growth of, 15-3936
 helped by knowledge of Latin, 12-3231
 men who first wrote, 15-3935
 revived in England, 3-589
 words in, 9-2351; 12-3231
 see also Story-dictionary in English
- English Pale**, in Ireland, 3-773
- Engstien Lake**, in Switzerland, 22-5847
- Enid**, and Geraint, 8-1988
- "Enigma"**, of Schiller, 21-5523
- Enipeus River**, 1-203
- "Enlightened One"**, see Buddha
- Enmity**, Mr., character in "Pilgrim's Progress,"
 8-1183
- Ensigns**, of navy, 18-4742; 23-6214
- Entente Cordiale**, of France, Russia and Eng-
 land, 9-2426
- Enterprise**, ship, 12-3008
- Envelope**, during Civil War, 8-2052
 how to draw and paint, 2-460
- Ever Bey**, and Young Turks, 13-3246
- Echippus**, prehistoric horse, 20-5334; 23-6062
- Examinondas**, Theban leader, 5-1324; 20-5209
- Ephraim**, freed-man, 11-2939
- Ephesus**, Duke of, Shakespearean character,
 3-638
- Ephesus**, Ionian city, 9-2351; 20-5202
- Epictetus**, a slave-philosopher, 5-1289; 11-2939
- Epicurus**, Greek, 3-1320
- Epidermis**, outer skin, 8-1922, 1981
- Epiglottis**, of the throat, 7-1649; 15-3997
- "Epigonen"**, by Immermann, 13-3398
- Epimetheus**, and Pandora, 19-5116
- Epiny**, Baron Franz d', character in "Count of
 Monte Cristo," 17-4432
- "Epitaph"**, by Cowper, 23-6031
- Epitaphs**, interesting, 2-475
- Equation**, chemical, 7-1697
- Equator**, description of earth's, 2-432
 gravitation at, 15-3825
 on the map, 7-1766
 spinning of people at, 20-5175
 why hot at, 12-3045
- Equilibrium**, and centre of gravity, 15-3883-85
 three states of, 14-3671, 3675
- Equinox**, vernal, 22-5896
- Equitable Building**, in New York, 19-5008,
 22-5765
- Erasmus**, Desiderius, Dutch scholar, 12-3192;
 14-3540
 in "Cloister and the Hearth," 16-4076
- Erdely**, see Transylvania
- Erebus**, ship, 21-5458, 5464
- Erebus**, Mount, crater of, 21-face 5465
 in Antarctic, 21-5464
- Erech**, Asiatic city, 19-4960
- Erie**, a servant, 4-981
- Erie**, the Red, of Greenland, 1-15
- Eriesson**, John, and Monitor, 9-2048, 2051
- Eriosea**, Leif, discoveries of, 1-15; 2-271, 273;
 14-3654
- Erie Canal**, building the, 6-1398; 7-1838; 13-3491;
 18-4764-65
 importance of, 10-2688
- Erie**, Lake, in America, 1-14, 228; 23-6120
- Erie**, Indian tribe, 1-21
- Erik**, king of Norway, and Margaret, 12-3136
- Eria**, ship, 19-4944
- Eritree**, colony of, 16-4308
- "Erl King"**, by Schubert, 13-3291
- Ermine**, fur of, 16-4060; 19-5074
- Eros**, servant of Antony, 22-5790
- Eros**, character in "Faerie Queene," 3-697
- Eruption**, volcanic, 8-2083; 12-3251, 3253
- Erymanthus**, Mt., Boar of, 12-3274; 20-5185
- Esarhaddon**, king of Assyria, 19-4966-67
- Esau**, Biblical character, 24-6329
- Esbjerg**, port of Denmark, 14-3658
- Escalita**, a street, 8-2147
- Escorial**, Spanish palace, 13-3344; 22-5850
- Esorick**, church of St. Helena at, 20-5384
- Eskimos**, and fat, 12-3231
 Arctic natives, 21-5456
 boat of, 12-3106
 costume of, 13-3437
 dogs of, 2-508, 511; 24-6318, 6324
 exhibits of, 20-5328
 in Alaska, 15-4060
 life of, 2-408; 4-1074-75; 11-2723; 21-5461
 "Esmond," by Thackeray, 9-2326-27
- Esmond**, Beatrix, character in "Henry Esmond,"
 13-3309
 character in "The Virginians," 13-3422
- Esmond**, Colonel Frank, character in "Henry
 Esmond," 13-3309
- Esmond**, Henry, character in "Henry Esmond,"
 13-3309
- Esmond**, Madam, character in "The Virginians,"
 13-3419
- Esmond**, Thomas, character in "Henry Esmond,"
 13-3309
- Esmond**, William, character in "The Virgin-
 ians," 13-3421
- Esnaubuo**, French corsair, 23-6043
- Esneh**, temple at, 23-6186
- Esopus Creek**, dam across, 20-5193
- Esperanto**, artificial language, 17-4483
- Esquimaux**, in Canada, 8-1919-20
 see also Eskimos
- "Essay on Criticism"**, by Pope, 23-6030
- "Essay on Man"**, by Pope, 23-6031
- "Essays"**, by Ralph Waldo Emerson, 6-1613
- "Essays of Elia"**, by Lamb, 18-4731
- Essen**, factories at, 11-2766
- Essex**, Earl of, and Raleigh, 21-5410, 5412
 and sardonyx ring, 24-6381
- Essex**, English county, 2-465
- Essex**, ship, 6-1398; 12-3008
- Estate**, the first, 8-2280
 the third, 16-4101
- Estates**, three, of France, 9-2280; 16-4100
- Estella**, character in "Great Expectations,"
 10-2461
- Esterhazy**, Haydn, bandmaster of, 13-3288
- Esterroom**, see Gran
- Ether**, a Jewess, 24-6332-33
 and Persian history, 20-5152
 character in "Ben Hur," 20-5259
- Estonia**, girl of, 15-3799
- Etah**, village in Arctic, 21-5462
- Etocles**, king of Thebes, 2-476
- "Eternal City"**, see Rome
- Eternity**, Cape, on the Saguenay, 7-1771
- Ethelbert**, king of England, 2-467; 18-4792
- Ethelred**, the Unready, king of the English,
 2-472; 14-3654
- Ether** (the), conveys radiations, 16-4230
 electric-waves of, 8-2170; 20-5356, 5358
 heat-waves of, 16-4310
 in space, 9-2297; 14-3582; 21-5514
 is everywhere, 8-2010; 15-3907
 keyboard of the, 20-5241, 5244
 light-waves of, 5-1285; 7-1791; 14-3780;
 15-4022; 17-4523
 specific gravity of, 15-3828
 states of movement in, 13-3426
 waves in the, 4-1085; 5-1319; 6-1449;
 14-3677-78; 20-5167
 see also Light, Sound, etc.
- Ether**, sulphuric, 7-1891; 10-2537; 11-2800;
 16-4632-33
- Ethers**, chemical substances, 7-1891
- Ethiopia**, Matthew in, 9-2351
- Ethyl-alcohol**, see Alcohol
- Etna**, Mt., Sicilian volcano, 8-2084; 12-3074;
 13-3251
- Eton**, founded, 3-776
- Etrich**, aviator, 1-177
- Etruria**, kingdom of, 6-1403; 20-5272
- Etruscans**, in Italy, 14-3694; 20-5271-74
- Ettie Shepherd**, see Hogg, James
- Eucaine**, an anæsthetic, 18-4633
- Eucalyptus**, Australian tree, 6-1376
- Eugene**, Prince of Savoy, and Spanish succes-
 sion, 10-2560
- Euphrates River**, in Asia, 15-3555; 19-4957,
 4960-61; 20-5146
 see also Assyria, Babylonia, etc.

GENERAL INDEX

- Eurasia**, Europe and Asia together, 14-3721;
15-3797
- Eureka**, meaning of, 12-3150
- Europe**, and Mexican debts, 17-4402
- animals of**, 1-55, 206; 2-406, 414; 3-678, 681-82;
4-1011-12, 1075; 5-1215, 1218-19; 13-3361,
3363; 21-5574; 24-6375
- ants of**, 11-2972
- birds of**, 6-1558, 1564; 7-1763-64; 8-1972,
1973-75; 22-5745; see also Birds
- bread in**, 8-1132
- butter in**, 5-1132
- butterflies of**, 12-3020
- Christianity in**, 10-2550
- elephants of**, 14-3667
- fish of**, 10-2707-08
- horse in**, 23-6063, 6066
- insects of**, 12-3196; 13-3305-07
- map of**, 8-2076
- nuts of**, 8-1997, 2001
- Peruvians in**, 20-5148
- plants of**, 16-4132; 20-5214
- salt in**, 1-238
- serpents of**, 6-1384, 1386
- statue of**, by MacDowell, 19-5040
- steppes of**, 12-3128
- sugar in**, 3-703; 5-2386
- trees of**, see Trees, first talk about
- wages in**, 11-2711
- wheat in**, 11-2949
- writing materials in**, 13-3479, 3482
- European**, skull of, 10-2569
- Eurythmus**, king of Argolis, and Hercules,
20-5185
- Eustace**, character in "Westward Ho!"
14-3714
- Eustace**, of Boulogne, 6-1551
- Eustache**, saved master, 18-4800
- Eustachio**, Bartolommeo, Italian scientist,
24-6234
- Eustachius**, physician, 18-4630
- Euxine Sea**: see Black Sea
- Evandale**, Lord, character in "Old Mortality,"
7-1776
- "Evangeline"**, by Longfellow, 4-398
- Evangeline**, country of, 1-223
see also Acadia, Nova Scotia
- Evangelist**, character in "Pilgrim's Progress,"
5-1125, 1127
- Evans, Augusta**, American writer, 8-2098
- Evans, Marian**: see Eliot, George
- Evans, Petty Officer**, death of, 21-5466
- Evaporation**, effect of, 2-428
of water, 10-2537
solar, in salt making, 1-238
- Eve**, in "Paradise Lost," 22-5679
- Eveline**, heroine of "The Betrothed," 6-1495
- Evelyn (John)**, comment on elder, 14-3535
- Evening-emerald**: see Peridot
- Everest, Sir George**, surveyor, 14-3683
- Everest, Mount**, in Himalayas, 6-1631; 14-3683;
15-3922
- Everglades**, swamp in Florida, 1-12; 23-5960
- Evergreens**, foliage of, 15-4013
plants called, 7-1793
- Everlasting-pea**, a plant, 17-4475
- Everlastings**, flowers, 6-1519
- Everything**, can we see? 2-518
reason for, 20-5290
- Evil-One**: see Wolverine
- Evolution of the Book**, a painting, by Alexander,
7-1638
- Ewald, Carl**, Danish author, 6-1483
- Ewes**, and lambs, 21-5664
- Ewing, Mrs.**, poems: see Poetry Index
- Excalibur**, sword of King Arthur, in "Table
Round," 4-885; 13-3372
- Excelsior**, a geyser, 3-584
- Exchange**, telephonic: see House that Jack has
- Excommunication**, punishment of, 10-2554-55
- Executive**, of United States, 6-1434
- Executive Mansion**: see White House
- Exercise-book**, what to do with, 10-2520
- Exercises**, to practise at home, 18-4829
with dumb-bells, 5-1301
- Exhauster**, in gas-making, 2-420
- "Exile of Erin"**, by Campbell, 14-3766
- Exiles**, to Siberia, 14-3798; 15-3805
- Experiences**, character in "Pilgrim's Progress,"
5-1185
- Expiration**, act of, 7-1652; 24-6309, 6355
- Explorations**, archaeological, 19-4958
- Explorers**, and what they found, 3-271
- Explosives**, for big guns, 23-6149
for locks, 24-6358
- Exposition**: see Chicago, exposition at, Phila-
delphia, exposition at, etc.
- Extractor**, for honey, 11-2858
- Extremities**, of the body, 16-4200
- Hyam**, English village, 2-633
- Eye-ball**, origin of, 17-4523
shape of, 16-4221; 22-5741
study of, 17-4425, 4433
- Eye-bright**, a plant, 18-3832
- Eye-brows**, growth of, 8-1932
use of, 16-4264
what are they for? 3-815
- Eye-glasses**, use of, 16-4232; 17-4428
- Eyelashes**, growth of, 8-1982
use of, 16-4264
- Eyelids**, and light, 5-1284-85, 1290
movements of, 20-5176
of herons, sewed-up, 3-1974
of snakes and fishes, 5-1290
use of the, 16-4264
- Eyes**, and great heights, 13-3513-14
and light, 5-1284-85, 1290
and onions, 8-2009
and sleep, 5-1284, 1290
assist balance, 15-3938
blinking of, 10-2469
bones about the, 10-2571
color-blindness, 1-166
compound, 13-3304
deception by, 2-518
dislodging things in the, 13-3440
electric waves that excite, 20-5244
in pictures, that follow you, 7-1884
injured by pure water, 3-816
light in the, 17-4425
lights and blows on, 11-2800
lights seen with closed, 12-3046
magnifying power, 20-5395; 23-5995
of baby, 22-5888
of chaffinches, blinded, 8-2111
of flatfish, 10-2605-06
of lizards, 5-1210, 1213, 1217, 1219
of owl, 7-1885
of snakes, 5-1219; 6-1387; 10-2469
of tuatera, 23-6001
of young animals, 7-1885
parts of the, 16-4329
protected by brows, 3-816
pupils change, 13-3510
sparkling of, 20-5176
spots before, 12-3046
squinting of, 14-3570-71
story of the, 16-4259
stuff of the, 15-4022
the median, 15-4021
unaffected by ear-rings, 14-3780
use of two, 7-1854; 10-2475; 14-3570
vision of, 1-46, 48, 112, 163; 7-1854, 11-2908,
2911; 13-3386
walking when eyes are shut, 7-1854
work of, 21-5623
- Eye-splice**, of a rope, 13-3326
- Eye-strain**, cause of headache, 22-5725
- Byre, Edward John**, explored Australia, 2-366,
367
- Ezra**, Biblical character, 24-6332

F

- Fables**, of Aesop, Buddha, etc.: see Aesop, fables
of, Buddha, fables of, etc.
- Fabre d'Églantine**, French poet, 14-3772
- Fabrizio, Gentile da**, Italian artist, 5-1174;
19-5097, 5100
- Fabricius**, physician, 18-4631
- Face**, arteries of, 19-4928
changes when thinking, 5-1285
crooked in mirror, 6-1586
description of, 10-2569
earth's changing, 12-3031
how to draw hundreds of faces, 10-5131
no man could look on, 4-1051
of backboneed animals, 8-2077
on the moon, 9-2206
that follows us from pictures, 7-1884
warm without clothes, 10-2537
- Facets**, of an eye, 16-4262
of gems, 24-6378
- Factor**, of fur-trade, 18-4836, 4838
- Factories**, in India, 7-1716
or trading-stations, 18-4078-79
tall chimneys of, 12-3234

GENERAL INDEX

- Factors**, in long division, 12-3468
 meaning of, 12-3223
Faculty, power of thinking, 10-5021
Fading: see Color, what fades
"Faerie Queens", by Spenser, 3-697; 6-1480;
 21-5411, 5486-87
 character in "Faerie Queens," 3-697, 699
Fagin, character in "Oliver Twist," 10-2562
Fags, in "Tom Brown's Schooldays," 16-4141
Fahrenheit, Gabriel Daniel, invented thermometer, 3-1937; 15-3910
Fahrenheit: see Scale, Fahrenheit
Painting, cause of, 5-1163; 10-2460; 12-3228;
 22-5993, 6108
 treatment for, 19-5032-33
Fair, at Nijni-Novgorod, 15-3796, 3802
Fair, why are some people? 1-167
Fairfax (Thomas, Baron), and George Washington, 3-779
 and Latham House, 18-4746
Fairfax Court House, serenade at, 12-3054
Fairweather, character in "Cobblers and Cuckoo," 9-2313, 2398
"Fair God," by Wallace, 2-274; 17-4398
Fair ground, in baseball, 20-5247
"Fair Harvard," by Gilman, 12-3054
Fairies, and the Hunchbacks, a story, 5-1146
 and the Sleeping Beauty, 7-1708
 fairy horn-cup, 8-1895
 fairy's revenge, 6-1526
 homes of the seven little, 1-265
 in the tulips, 6-1468
 inside the shells, 7-1727
 of piano: see Music
 of St. David, 10-2636
 plants sought by, 18-4658, 4660
 resting-place of the, 12-3468
 strange cap of, 2-2231
 two new games of, 13-3379
 see also Fairy-books
"Fair Maid of Perth," story of, 6-1496
Fair Oaks, battle of, 8-2048
Fairoaks, in "Pendennis," 13-3515
"Fair One with Golden Locks," authorship of, 6-1478
Fairport, in "Antiquary," 7-1667
Fairport, sheriff of, character in "Antiquary," 7-1668
Fairy-books, writers of the, 6-1477
Fairy-cap: see Foxglove
Fairyfoot, story of, 15-4049
Fairy Grotto, in Mammoth Cave, 5-1309
Fairyland, court of, 2-frontis.
 story about, 3-697
Fairy Maid, of Van Lake, 8-2316
Fairy-ring, of fungi, 18-4689; 19-4881
 see also Mushrooms
Faith, character in "Faerie Queens," 3-698
Faith, concrete ship, 16-4243
Faithful character in "Pilgrim's Progress," 5-1129, 1181, 1183
"Faithful Servant," by Grillparzer, 12-3398
Falcon, Mr., character in "Peter Simple," 8-2080
Falcon, bird of prey, 7-1893, 1898-99; 9-2342;
 see also Merlin
 egg of, 7-face 1756
Falcon, ship, 10-2492
Falconer, E., song-writer, 14-3771
Falconer, Robert Alexander, president University of Toronto, 21-5403
Falconet, Etienne M., French sculptor, 16-4174
Falconry, hunting with falcons, 7-1900
Falleri, Giovanni, and Canova, 20-5381
Falkirk, battle of, 1-126, 128
Falkland, Lucius Carey, Lord, went over to Charles I., 7-1858, 1866
Falling, dreams of, 22-5811
Fallopius, physician, 16-4630
Falstaff, character in "King Henry IV," 21-5587
Families, of plants, 16-4133
Family, a painting, 7-1688
Family, the Teutonic, 14-3651
Family Compact, in Upper Canada, 3-759
Famine, and the Gibeonites, 22-5915
 in Ireland, 21-5558
 in Russia, 15-3798
Fan, of paper, 18-4825
Fancy-dress, costumes for, 20-5246-47
 see also Costumes
Fangs, of poisonous snakes, 6-1879-80, 1333;
 12-4275
Fanning Island, 3-1492
Fan-palm, the Washington, 21-5432-33
Fantail, a pigeon, 9-2217, 2219
Fantuel, Peter, Boston merchant, 12-3002
Fantuel Hall, in Boston, 12-3002; 20-5369
Faraday, Michael, English scientist, 2-2161, 2167, 2169; 17-4442; 18-4623
"Farewell", by Uhland, 12-3296
Farewell Cape, 6-1486
Faria, Abbe, character in "Count of Monte Cristo," 16-4319; 17-4482
Farm, Canadian Experimental, 1-226; 2-2275
 for furs, 19-5074, 5078
 in Newfoundland, 24-6297
 in Philippines, 3-2153
 life on, 6-1394
 problem concerning, 3-736
Farman (Henry), flights of, 1-176
Farmer, and his dog, 21-5568
 and his sacks, 22-5684
 and his sons, 9-2317
 and the brownie, 16-4238
 and the raven, 23-6023
 and the stork, 11-2962
 and the tramp, 1-266
 cunning, and the dwarf, 12-4860
 in "Canterbury Tales," 15-3939
 of India, 7-1717
Farne Islands, and Grace Darling, 7-1743
Faroe Islands, ownership of, 14-3658
Farragut, Captain, character in "Twenty Thousand Leagues," 19-5049
Farragut, David G., during American Civil War 8-2048, 2050, 2052
 statue of, 12-4671-72
Fashions, French, 9-2422
Fasts, of Eastern church, 15-2798
 of men, 11-2729
Fat, and hot water, 16-4272
 and oil, 11-2804
 as body-fuel, 18-4110; 21-5622
 as food, 11-2729-30; 12-3231; 21-5622
 digestion of, 9-2365-66
 in milk, 6-1132; 11-2827; 17-4372
 of cocoa, 12-3415
 of soap, 12-3226
Fatalism, what it is, 21-5515
Fat Boy, character in "Pickwick Papers," 10-2459
Fates, three, of the Parthenon, 12-4172
Father, boy who served his, 23-6028
Father Christmas, in story, 9-2180, 2184
Father Frits: see Frederick II., the Great
Father of His Country: see Washington, George
Father of His People: see Louis XII., king of France
Father of History: see Herodotus
Father of Lepreoy: see Gecko
Father of New France: see Champlain, Samuel
 do
Father of Paris: see Louis, St.
Father of Terror: see Sphinx, of Ghizeh
Father of the Naval Academy: see Maury, Matthew P.
Fathers of the Confederation: see Canadians, well-known
Father Thames: see Thames River
Father William: see William the Silent
Fatigue, effect on digestion, 12-3160
 or tiredness, 7-1879; 15-4022
Fault, in rocks, 11-2920
 in tennis, 17-4379
"Faust," by Goethe, 20-5213
 by Gounod, 12-3294
Faustinus, a Roman Christian, 4-382
Fawkes, Guy, treason of, 4-1056; 7-1806-07;
 17-4537
Fawn, behavior of, 21-5663
 on canal-boat, 12-4768
Fawn-illy: see Adder's-tongue
Fear, an emotion, 22-5188
 and heart-beats, 12-5020
 and sounds, 19-4871
 causes hair to rise, 12-4275
 effects of, 12-3180; 17-4483; 22-5992
 feeling of, 11-2736
 of beetles, etc., 12-4275
 turns face white, 12-3822
Fearless, Thel: see Richard the Fearless
Feast, guests at the, 21-5566
"Feast in the House of Simon," painted by Veronese, 3-1177
Feathers, and fans, 12-2590
 birds killed for, 6-2240-44
 collection of, 12-4704
 drawing, 22-6162

GENERAL INDEX

- Feathers, end of, 3-3333**
 falling off, 13-4903
 for Egyptian standards, 7-1637
 not alive, 3-1193
 of Prince of Wales, 3-773
 problem concerning, 3-733
 prophecy by, 23-5933
 use of oil on, 3-1503
 why shed, 3-2350
 see also Cassowary, Ostrich, Quills, etc.
- Feather-star, a marine animal, 3-face 2404 bis, 2412; 14-3665**
- Feather-stitching, how to do, 3-730**
- Febra, festival of, 17-4532**
- February, name of, 17-4531**
 stone for, 34-6377
- Federal Hall, in New York, 3-1392; 13-5010, 5017**
- Federalists, of Argentina, 20-3362**
- Feders, of marine animals, 3-2404 bis, 2408**
 see also Antenna, Tentacles
- Feeling, and thinking, 13-5082; 20-5187**
 see also Emotion
- Feet, and cold, 3-1983**
 assist balance, 13-3993
 binding of Chinese, 13-4020
 coldness of, 3-1594
 coverings for, 13-3106
 deformed, of Chinese, 13-3112
 exercises for, 13-4829
 wearing away of, 13-2472
 webbed: see Birds, that swim and climb, Jacanas
- Feldspar, a mineral, 22-5887**
 for china, 17-4541
 in Nova Scotia, 21-5544
 see also Moonstone
- Fellie, daughter of Earl of Warwick, 3-1356**
- Fell, Margaret, a Quaker, 22-5935**
- Fellahin, of Egypt, 13-4304**
- Felling, how to do, 2-439**
- Females, protective instinct of, 20-5189**
- Femme Ossage, Boone's cabin at, 24-6251**
- Femur, bone of the leg, 13-2571; 13-4201**
- Fence-lizard: see Swift**
- Fence-posts, trees used for, 17-4562**
- Fences, rail, 20-5299**
- Fen Country, of England, 1-123**
- Fenris, wolf-spirit, 1-93**
- Ferdinand, Shakespearean hero, 2-330**
- Ferdinand, tsar of Bulgaria, 13-3242**
- Ferdinand (X), Holy Roman Emperor, reign of, 10-2556; 11-2898, 2903; 21-5652; 22-5850**
- Ferdinand II, of Austria, 10-2558**
- Ferdinand III, defeated Bohemians, 11-2904**
- Ferdinand III, king of Castile and Leon, 13-4745**
- Ferdinand V, king of Castile, ancestor of Charles V, 14-3544**
 and Columbus, 10-2445; 17-4464
 and New World, 2-282
 married Isabella, 13-3340-42
- Ferdinand VII, king of Spain, deposition of, 17-4514**
- Ferguson, Major Patrick, at King's Mountain, 4-1007-08; 7-1834**
- Fergusson, Robert, Scotch poet, 23-6032**
- Ferment, of saliva, 3-2172**
 of yeast, 23-5991
- Fermentation, alcoholic, 7-1890-91**
- Ferments, and temperature, 16-4088**
 in seed, 17-4436
 of the body, 3-2364, 2366
- Fermier, et la Cigogne, 13-4854**
- le malfin, et le Nain, 20-5335**
- Fern, Will, character in "The Chimes," 3-2300**
- Fernand, character in "Count of Monte Cristo," 13-4315; 17-4431**
- Fernando, prince of Portugal, a prisoner, 13-4627**
- Ferns, appearance of, 1-168**
 basket for, 21-5543
 cultivation of, 3-280; 3-617; 13-3554
 section out through fern, 3-2333
 that formed coal, 4-trentia, 329
- Ferraz, Robert, martyrdom of, 13-5094**
- Ferrara, Duchess of, 14-3635**
- Ferraz, Letty, character in "Magic Pen of Truth," 3-2062**
- Ferrero, Guglielmo, Italian writer, 20-5315**
- Ferret, for chinchilla, 13-5077**
 life-history, 1-157
- Ferris Wheel, at World's Fair, 11-2803**
- Ferrule, of knife, 13-4305**
- Ferry, problem of crossing, 2-431**
- Ferry-boat, fire on, 7-1521**
- Fertilizers, artificial discovered, 4-863**
 for plants, 13-4144
 from cod, 24-6294
 from cotton-seed, 13-4386
 in United States, 13-2656
- Fescue, sheep's, 13-4058-59**
- Fessenden, M. A., and wireless, 17-4448**
- Festival, Dionysian, 13-5040**
- Fetlock, of horse, 23-6062**
- Fetdallism, in Europe, 3-473; 11-2787, 2900**
- Fever, effect of, 3-1924**
 malarial, 12-3237
 Texas, 24-6368
 typhoid, 24-6368
 typhus, 11-2301; 13-4822
 yellow, 3-2154; 12-3201-02, 3235-36; 21-5596-99; 24-6368
- Fes, king of, and Prince Fernando, 13-4027**
- Fessiwig, character in "Christmas Carol," 3-2198, 2200**
- Fessiwig, Mrs., character in "Christmas Carol," 3-2200**
- Fessiwig, the Misses, characters in "Christmas Carol," 3-2200**
- Fibres, bulbs grown in, 7-1852**
 elastic, 24-6310
 for ropes, 13-4003-11
 of asbestos, 23-6095
 of ear, 13-3917
 of milkweed, 13-5092
 see also Nerves, Muscle, Stomach, etc.
- Fibula, bone of the leg, 13-2571; 13-4301**
- Fickett, Francis, built ship Savannah, 13-2492**
- Fiddler, magic boy, 3-578**
- Fiddler-crabs: see Crab**
- "Fidello," by Beethoven, 13-3292**
- Field, Cyrus, West, and Atlantic cable, 13-2487**
 2404; 17-4445
- Field, Eugene, poems: see Poetry Index**
 poetry of, 3-1621
- Field, and the ponds, 21-5524**
 from moving train, 13-4817
 problem concerning moving of, 3-1104
- Fielder, in baseball: see Baseball**
- Fieldfare, a bird, 3-2109, 2112**
- Field-golf, a game, 3-735**
- Fielding, Henry, English author, 7-1745, 1750**
- Fielding, May, character in "Cricket on the Hearth," 3-2302**
- Field-Marshal, etc., carved figure, 13-4679**
- Field-of-the-Cloth-of-Gold, meeting of kings on, 4-857; 3-2072; 21-5535**
- Field-of-the-Dead: see Arlington**
- Fields, the, in New York, 13-5006**
- Field-scorpions, a plant, 17-4473**
- Fiery-face: see James II, king of Scots**
- Fiesole, Fra Angelico, works at, 13-4036**
 history of, 11-2787
- Fifth Avenue, in New York, 13-5012**
- "Fifty-four-forty-or-eight," origin of phrase, 7-1842**
- Fighting, instinct of, 20-5189**
- Fighting-Joe: see Hooker, Joseph**
- "Fighting Temeraire," ship, painting by Turner, 17-4591, 4598**
- Figs, cross fertilization of, 13-3302; see also Caprifig**
 stories about, 13-4991
 where grown, 3-651, 656
- Figureheads, for ships, 13-4665**
- "Figure of a Girl," by Hunt, 13-4253**
- Figure-of-eight: see Knots**
- Figures (numbers), are Arabian, 13-3860**
 moved by hand, 24-6282
 new way of writing, 13-2466
 Tom and Nora learn to write, 13-3331
 verses made with, 22-5742
- Figurines, Tanagra, 20-5206**
- Figwort, insect on the, 13-3454**
 the water, 13-4954, 4956
- Figwort-family, of plants, 13-4136**
- Fiji Islands, birds of, 7-1640**
 fruits of, 3-1492
 natives of, 3-1491-93
- Flagree-work, of frost, 13-4937**
- Filberts, nuts, 3-1997-98**
- File, and snake, 7-1309**
- File-fish, poisonous, 10-2610**
- Filippi, Sandro: see Botticelli, Sandro**
- Philippines, in the Philippines, 3-2151, 2154-55**
- Fille, du Wessex, 13-4055**
- Fillmore, Millard, administration of, 13-3488, 3492**
 as president, 3-2043; 3-2323, 2434
 lived in New York, 3-3333

GENERAL INDEX

- Film**, invention of celluloid, 20-5136, 5140
Films, and acting, 20-5144
Filomena, Italian doll, 13-face 3434, 3435
Filter, a boy can make, 22-5739
 for color photography, 20-5142
 for water, 8-2116, 2124
 see also Jack, house of, Nose
Fin, of basilisk, 8-1211
 of fishes, 2-673, 675; 10-2464, 2478, 2480, 2607, 2610
Finch, Francis Miles, poems: see Poetry Index
Finch, the purple, 13-3458-59
Finches, birds, 8-2104, 2111; 9-2345; 13-3458
 see also Chaffinch, etc.
Fine Arts, Manchester Royal Institution of, 8-1260
Fingal, in "Peter Simple," 8-2029
Finger-nails: see Nails
Finger-prints, use of, 7-1882
Fingers, bones of the, 10-2466, 2573; 18-4200
 cut, 8-1921
 dislocation of, 17-4383
 how we number, 11-2925
 in piano-playing, 13-3333
 length of, 8-2006
 numb, 17-4375
 of the hand, 10-2571
 use in counting, 8-2005
 why ten, 8-2005
Finis, meaning of, 16-4274
Finisterre, Cape, of Iberian Peninsula, 13-3339
Finland, history of, 14-3726, 3728; 15-3805-06
Finland, Gulf of, in Europe, 14-3726; 15-3798
Finlay, Doctor Carlos, mosquito theory, 12-3236
Finley, John, and Boone, 7-1832
Finmark, history of, 14-3652, 3661
Finns, history of the, 14-3652, 3721-22
 in Canada, 1-230; 22-6948
Fiodor, Russian writer, 20-5314
Fjords, sea-inlets, 14-3652, 3657, 3659, 3661
Fiorilli, Signor, and casts of Pompeii, 23-6222
Fiorenza: see Florence, Italy
Fir, after frost, 13-4932, 4936
 and the bramble, 17-4316
 discontented, 14-3617
 Douglas, 1-232; 9-2385, 2387
 of Canada, 14-3733
 see also Spruce-fir
Fire, cannot light itself, 14-3679
 character in "Blue Bird," 22-5836
 coal best fuel for, 14-3775
 colonial, 8-1392
 colors in, 22-5892
 discovery of, 24-6342
 earliest ways of making, 3-810
 gases arising from, 9-2246
 Greek, 5-1164
 Ice Man and the Great, 7-1913
 inside of earth, 4-1084; 13-3383
 keeping, 9-2427
 lighting a, 15-4045
 making, 3-663
 making draught for, 16-4113
 produced by rubbing, 17-4389
 put out by sun shining? 6-1418
 smoke from, 9-2245
 that feeds itself, 3-645
 the Great: see London, Great Fire of
 what it is, 4-957
 what to do in case of, 12-3113
 why goes out, 1-170, 13-3383
 why hot, 4-1084; 14-3776
 why water quenches, 7-1791
 worship of, 15-3860, 20-5146, 5155
Fire-alarm, what happens when it rings, 22-5755
Fire-boats, in New York, 22-5759, 5764, 5769
Fire-companies, American, 22-5757
Fire-damp, in coal mines, 4-839; 5-1313
 see also Marsh-gas
Fire-snaps, for night use, 12-3113
Fire-ash, picture of, 10-face 2600
Fire-flies, beetles, 13-3297-99
 characters in "Blue Bird," 22-5839
Firelight, dancing of, 19-4874
Fire-maker: see Camp-Fire Girls
Fireman, costume for, 20-5347
 locomotive, 8-316
 training of, 22-5758
Firemen and Enginemen, Brotherhood of, 19-4128
Fireship, lump of camphor, 15-3901
 of Kanaris, 13-3239
Firewalkers, from Tahiti, 20-5332
First-aid, for bleeding, 6-1595
 to the injured, 15-3963; 16-4200, 4288; 17-4382; 18-4616; 19-4928, 5032, 5125
 see also Trouble, what to do in
First-born, right of the, 14-3781
Firth of Forth, Scotland: see Forth Bridge
Firths, sea-inlets, 14-3652
Fish, Williston, and "Last Will," 20-5379
Fish, and cold, 16-4088
 and semi-circular canals, 15-3999
 and the angler, 15-3879
 andromadous, 10-2704
 Antony and the, 22-5788
 as food for birds: see Birds
 blind, 10-2707
 boy who got, 23-6028
 brains of, 14-3687
 breathing of, 7-1886; 9-2410; 14-3781; 15-4000
 cannot live on land, 4-917
 cold-blooded, 3-571
 development of, 14-3666
 die in water, 10-2471
 do not change, 10-2470
 do not drown, 7-1888
 drinking of, 23-5994
 electric, 8-2161; 10-2481-82
 eyeless, of caves, 5-1305
 eyes of, 5-1290; 18-4259, 4263
 feeling of, 16-4272
 food of, 19-4876
 food-value of, 11-2727; 12-3182; 13-3275; 20-5372
 for manure, 1-17
 for marine aquariums, 17-4492-93
 fossil, 11-2917, 2919-20
 gills of, 2-378; 15-4000
 habits of, 15-3842
 hatcheries of, 10-2678
 hearing of, 7-1885
 hidden, 21-5151
 how they are taken, 15-3841
 in frozen pond, 18-4271
 in their natural colors, 10-face 2600
 Indian cookery of, 24-6273
 lowest vertebrates, 10-2463
 none in Dead Sea, 22-5815
 not salt when caught, 12-3234
 of America, 10-2701
 of rivers and lakes, 5-1290; 10-2699
 of sea and river, 10-2477, 2601
 of the United States, 10-2678
 parental instinct, 20-5190
 poisonous, 10-2609-10
 scales for pearls, 24-6379
 sleep of, 5-1290
 spinning picture of, 21-5447
 thirst of, 17-4375
 various, 3-670-73, 677
 will not turn into another animal, 10-2470
 see also Angler-fish, Eel, Flying-fish, Ray, Sardines, Sturgeon, Sucking-fish, etc.
Fishbowl, making of, 5-1264-65
Fish Commission, of the United States, 10-2704
Fish-crow, a bird, 8-2344
Fish-eagles, feed on salmon, 10-2703
Fishes, Bishop, execution of, 19-5093
Fishes, fur-bearing animal, 15-5074
Fisheries, disputes with England, 10-2438
 lobster, 10-2614
 New England, 10-2602; see also Banks, Cod, etc.
 of Canada, 15-3955
 of France, 9-2419
 of Holland, 14-3548
 of Maritime Provinces, 21-5544
 salmon, 10-2703
 United States Bureau of, 20-5372
 United States Department in charge of, 6-1137
 see also Cod, Fish, Fishing, Newfoundland, etc.
Fisherman, made at dinner table, 9-2267
Fishermen, on Newfoundland Banks, 3-553, 555; 10-2602; 20-5373
Fisher's Island, shipwreck near, 8-1954
Fisherwoman, of France, 9-2419
Fishes, the, a constellation, 10-2643
Fish-footmen, characters in "Alice in Wonderland," 12-3080
Fish-hawk, bird, 9-2342; 12-3153
 nest of, 7-1762
Fishing, birds used for, 6-1566
 in England, 15-3840
 in Newfoundland, 24-6293
 in Norway, 14-3657, 3661-62
 in Russia, 15-3797-98, 3802

GENERAL INDEX

- Fishing**, in Yellowstone Park, 3-587
of American colonies, 4-593, 963
of birds: see Birds
of Indians, 1-21; 10-2576
Fishing-frogs: see Angler-fish
Fish-line, bag for, 23-6079
Fish-lizard: see Ichthyosaurus
Fishmonger, in Cairo, 23-6181
Fisk University, and jubilee singers, 12-3054
Fistulina hepatica: see Beef-steak fungus
Fitch, John, steamboat of, 10-2488
Fits, epileptic, treatment for, 19-5033
Fitzball, Edward, wrote song, 14-3769
Fitzgerald, Edward, English poet, 23-6038
Fitzgerald, Maurice, English baron, 21-5554
Flame, port of Hungary, 21-5651, 5657
Five Forks, battle of, 8-2054
Five Nations, of Iroquois, 1-21; 2-278; 4-894, 899
Tuscaroras joined, 2-532
"Five Nations", by Kipling, 23-6040
Five Rivers, land of the: see Punjab
Fives, a game, 6-1603
Fives and threes, domino game, 15-4044
Fix, character in "Round the World," 19-4911
Fjords, sea-inlets: see Fjords
Flaccus, Quintus Horatius: see Horace
Flag-raising Day, celebration of, 17-4463, 4467
Flag Resolution: see Flags, story of American
Flags, a game, 3-618
Flags, colors of, 20-5397
flag of Commodore Perry, 12-3010
makers of the, 21-5490
of all nations, 7-1657
of fifty nations, 7-face 1659
of Ft. McHenry, 12-3052
signaling with, 19-5122
story of American, 21-5491
see also under names of individual countries,
Alphabet, Crosses, Signaling, Union Jack,
etc.
Flagstaff, of Leopard, 5-1172
Flag-wagging: see Alphabet, of flags, Sema-
phore-signals, Signaling by flags
Flakes, for drying fish, 24-6295, 6297
Flame, always goes up, 9-2248
attracted by something above it, 15-4020
cannot pass gauze, 22-5809
effect of sound upon, 19-5057-58
Koenig's flames, 19-5057
of elements, 7-1695
of the sun, 8-2092-94
what it is, 4-957
Flame-flower: see Kniphofia
Flamingoes, birds, 8-1978-79; 9-2341
characters in "Alice in Wonderland,"
12-3158
Flamsteed, John, English astronomer, 7-1375,
1682
Flanagan, character in "Round the World,"
19-4910
Flanders, earls of, 14-3542
Flanders, cloth-workers of, 3-773
printing in, 3-776
Flange, on wheel, 4-920
Flannel, why it feels warm, 3-692
Flappers, of whales, 3-675
Flash, seeing before hearing noise, 3-813
Flashman, character in "Tom Brown's School-
days," 16-4140
Flash, thermos, 21-5637
Fiat, in music, 10-2695
Fiatish, various kinds of, 10-2605
Flatiron Building, in New York, 10-2683;
19-5010
Flatstone Land: see Helluland
Flatterer, character in "Pilgrim's Progress,"
5-1185
Flavor, of meat, 13-3273
Flax, and microbes, 4-906
and the pine-tree, 12-3071
for paper, 4-943
in Belgium, 14-3550
in Egypt, 16-4306
Flaxman, John, English sculptor, 16-4174
Flax-seed, oil from, 9-2386
nupa-cases, 12-3300
Flintane, a plant, 20-5214
Flies, sand: see Sand-flies
Fledglings: see Blue-birds
Fleecefold, in story of Fairyfoot, 15-4049
Fleet, British, and battle of the kegs, 12-3052
Fleet Street, in London, 11-2917, 2919
Fleming Hall: see Queen's University
Flemish, exile of, 14-3546
Flemish loops see Knots
Fletcher, Abel, character in "John Halifax,"
15-3869
Fletcher, John, English dramatist, 21-5489
Fletcher, Phineas, character in "John Halifax"
15-3869
Fletcher, Robert, educational leader, 21-5404
Fleur-de-lys, emblem of France, 7-1658, 1830;
20-5230; 22-5616
see also Iris
Flexner, Dr. Simon, scientist, 24-6369
Flicker, a woodpecker, 12-3135
Flies: see Blue-birds
Flies, and flycatchers, 9-2221
dangerous insects, 16-4262
hearing of, 19-5023
in winter, 1-49
sight of, 19-5022
strength of, 16-4273
tongues of, 9-2337
various, 12-3194, 3200-05
walking on ceilings, 4-916
wings of, 9-2335
see also Blue-bottle, Ichneumon-fly, Tsetse-
fly, etc.
Flight, and gravitation, 14-3568, 3569
height of, 22-5871
instinct of, 20-5188
of aeroplanes, 15-3887
of birds, 6-1503-04, 1510
of Mohammed: see Hegira
Flight, horse named, 17-4532
Flinders, Matthew, explored Australia,
2-365, 367
Flint, Captain, in "Treasure Island," 14-3630
Flint, for fire-making, 3-662, 810-11; 6-1392;
9-2427; 24-6343
for knives, 18-4801
in chalk cliffs, 20-5349
in grass stems, 5-1340
Flintlocks, kind of gun, 9-2427
Flitter-mice: see Bats
Floats, fancy, 15-3899
Flodden Field, battle of, 4-860; 12-3139-40
Flood, Henry, and Irish parliament, 21-5557
Flood Book, blowing up, 22-5754
Floods, Babylonian story of the flood, 19-4968
caused by beaver, 3-680
flood at Linton Falls, 18-4661
in France, 9-2418
peasant at the flood, 17-4357
prehistoric, 1-15
saved from the flood, 19-4974
Flora, Cape, in Arctic, 21-5460
"Flora Macdonald's Lament", song, 14-3770
Florence, and Fra Angelico, 15-4035
and Savonarola, 15-4028, 4038
and the Reformation, 12-3192
art in, 17-4590
builders of, 5-1253; 11-2787
cathedral of, 11-2794; 13-frontis.
Italian city, 12-3074, 3080, 3086
presses in, 14-3610
Florets, of composites, 16-4136
Florida, ship, 8-2052
Florida, admission of, 13-3491 -
and Spain, 6-1389
birds of, 8-1972, 1978; 9-2340-41, 2344
cedar of, 13-3485
climate of, 1-10, 9-2384
conquest of, 2-274
description of, 23-5960
discovery of, 2-272
Everglades of, 1-12
fighting in, 4-895
flower of, 22-5815
fruit in, 3-649-52; 9-2386; 15-3960
government of, 3-556
history of, 7-1836, 1840
name of, 3-652
purchase of, 10-2438; 13-3346, 3490
secession of, 8-2044; 13-3492; 23-5957
settlements in, 2-276
sponges and, 16-4265, 4267-69
taken by England, 4-800
see also Seminole War
Florimell, character in "Faerie Queene," 2-701
Florina, the Princess, 12-3280
Florisel, Prince, Shakespearean character, 3-560,
563
Flour, made by roller-mills, 11-2717
production of, 10-2684
use of, 5-1131
water in, 5-1192-94
Flour-mill, inside of, 5-1139
Flower-basket, Venus', marine animal, 9-2404 bis

GENERAL INDEX

- Flower-box**, hanging, 9-2359
 making, 8-1103
 rustic, 17-4381
- Flowering-rush**, a plant, 19-4950, 4952
- Flower-pot**, of tin can, 7-1736
- Flowers**, and Darwin, 17-4527
 arrangement of, 3-622; 15-4016
 buried, 21-5523
 cleistogamous, 17-4349
 color of, 12-3145; 16-4114; 22-5894
 come out of small seeds, 5-1165
 construction of, 16-4134
 cross-fertilization of, 1-44; 11-2858; 14-3563
 do not talk, 5-1283
 drooping of, 22-5723
 early death of, 22-5812
 for garden, 1-249
 growth of, 17-4369
 habits of, 15-4018
 heat of, 12-3148
 how flower is born, 15-3811
 how to make paper, 16-4198
 hurting, 17-4369
 in Holland, 14-3546
 in winter, 2-391; 20-5175
 Indian story of, 5-1111
 insects that resemble, 13-3447
 little known British, 17-4473
 little stories about, 12-3210
 living flowers of the sea, 9-2404 bis
 making simple patterns with, 13-3380
 national, 17-4348
 not faded by sun, 17-4586
 of frost, 10-2526
 of grass, 5-1340
 of rocky places, 18-4757
 of states, 22-5815
 of the garden, 20-5267
 of the seaside, 20-5211
 of the stream, 19-4947
 on all trees, 1-188
 perfumes from, 5-1515
 sight of, 11-2799
 sleep at night? 5-1283
 sleeping with, 8-1416
 smell of, 1-44; 7-1878
 spirit of the, 12-3210
 sugar in, 3-704; 19-4878
 the Red Flower, in story of Mowgli, 21-5468
 wild, 4-913
- "Flowers of the Forest,"** a Scottish lament, 12-3140
- Flower-stand**, of boxes, 11-2721
 rustic, 17-4381
- Fuses**, of boiler, 2-304
- Fluid-pressure**: see Pressure, fluid
- Fluids**, convection of heat in, 16-4231
 fluid in ear, 15-3912, 3917
 laws of, 15-3984
 what they are, 15-3977
- Flukes**, of an anchor, 18-4619-20
- Fluorine**, a gaseous element, 5-1314
- Flushing**, town in Holland, 14-3540
- Fly**: see Baseball
- Fly-amanita**, 19-face 4880
- Flycatcher**, bird, 9-2212, 2221, 2344; 13-3457
 egg of, 7-face 1766, 1760
 nest of, 22-5751
- Flying**, and specific gravity, 15-3828
 by men, 1-171
 of birds, 4-918
- Flying-boat**, Curtiss', 1-183
 naval, 23-6204
- Flying-corps**, work of the, 1-179
- "Flying Dutchman,"** by Wagner, 13-3293
- Flying-fish**, enemies of, 10-2482
 habits of, 10-2607
- Flying-fox**: see Bats, Fruit-bat
- Flying-machine**, a simple, 7-1849
 development of, 1-174; 11-2718, 22-5810
 equilibrium of, 15-3387
 needs new alloy, 7-1888
 see also Aeroplane, etc.
- Flying-mouse**, an animal, 3-804
- Fly-crochis**, a plant, 17-4478
- Fly-trap**, Venus', a plant, 14-3566; 15-3814
- Foal**, taught by mare, 21-5663
- Foam**, whiteness of, 5-1164
- Foam-flower**, plant, 11-2383
- Focus**, of eye, 16-4331
- Foe**, James, father of Daniel Defoe, 7-1746
- Foes**, unseen, 4-905
- Fog**, character in "Pickwick Papers," 10-2459
- Fog**, clearing of, 12-3144
- Fog**, deadens sound, 15-4019
- Fog**, seen from balloon, 14-3681
 warnings of, 24-4317
 what causes, 4-920
- Fogg**, Phileas, character in "Round the World," 19-4909
- Foker**, Harry, character in "Pendennis," 13-3516
- Fold**, how farmer enlarged, 16-4293; 17-4883
 Mitchell's, 11-2758
 of the brain: see Brain
- Foley**, English sculptor, 19-5040
- Folk Songs**: see Voices of Nations in Song
- Follen**, Eliza Lee, poems: see Poetry Index
- Folsom**, Francis: see Cleveland, Francis
- Folsom**
- Fomalhaut**, a star, 10-2643
- Fondant**, recipe for, 1-255
- Fontainebleau**, Napoleon at, 9-2292
- Food**, and its uses, 11-2727
 and the body, 9-2867; 22-5904; 23-6109-10
 as fuel, 23-5994
 carried by the blood, 5-1463
 cereals as, 11-2947; see also Wheat, etc.
 dearthness of, 20-5290
 how and when to eat, 12-3097
 nature's wonderful, 11-2827
 of animals, 1-186; 10-2472
 of desert tribes, 23-6102
 of first living thing, 16-4110
 of goldfishes, 7-1741
 of Indians, 2-278; 10-2578
 of plants, 1-186
 real value of, 12-3179
 sea-animals for, 9-2412
 sugar is, 3-704
 which contains iron, 6-1431
 why we cook, 4-1082
- Food-products**, of United States, 10-2684
- Food-supply**, will it ever run short? 7-1858
- Fool**, Epictetus' remark upon, 5-1289
 jester and king, 17-4347
 wise fools of Gotham, 16-4128
 wisest, 4-1036
- Fool's parsley**, poisonous plant, 17-4348, 4353
- Foot**, bleeding of, 19-4929
 bones of the, 10-2573-74; 16-4201
 fracture of, 16-4289
 of shell-fish, 10-2515-18
 unit of length, 14-3672
 use of, 14-3668-69; 16-4303
- Football**, how to play, 24-6277
 in colonies, 4-965
- Football match**, energy after, 22-5892
- Foot-binding**, among Chinese women, 12-3112
- Foot** (Andrew H.), Commodore, during Civil War, 8-2047
- Footlights**, of model stage, 18-4822
- Footpaths**, in the air, 3-23
- Footprints**, following, 7-1854
 Friday's, 8-1229
- Footstool**, making a, 9-2361
- Foraminifera**, aquatic animals, 9-2406
- Force**, centrifugal, 9-2246; 14-3676
- Force-out**: see Baseball
- Ford**, Onslow, English sculptor, 16-4174, 4182
- Fordham Hospital**, in New York, 18-4629
- Fordham University**, history of, 17-4572
- Ford's Theatre**, Lincoln assassinated in, 8-2054
- Forearm**, bones of: see Arm, bones of
- Forebay**, of electric works, 11-2715
- Forecastle**, of a ship, 18-4620
- Forefathers' Day**, celebration of, 17-4470
- Foreigners**, in United States: see Alien and Sedition Acts
- Forel**, Dr., Swiss naturalist, 3-816
- Forel**, Professor, and dragon-flies, 16-4262
- Forest**, Lee de, and wireless, 17-4448
- Forest Ferocious**, in "Table Round," 4-884
- Forestry**, in Germany, 11-2769
- Forests**, and deserts, 12-3125
 buried in sand, 16-4118
 disappearance of, 4-942
 finding way in forest, 6-1605
 in carboniferous rocks, 11-2919
 of Canada, 14-3733
 of Central America, 17-4406
 of coal, 10-2500
 of Maritime Provinces, 22-5546
 of Mexico, 17-4400
 of South America, 20-5386, 5370
 petrified, 14-3624, 3626
 picture, 2-430
 value of, 14-3742
- Forfarshire**, ship, 7-1743
- Forfeits**, a game, 7-1856

GENERAL INDEX

- Forget-me-not**, a plant, 7-1738; 13-3325; 13-4136;
13-4956
legend of, 12-3210
see also *Germander speedwell*
Forgiveness, world without, 13-5026
Foris, for gardening, 1-249
tale of, 1-4801
trick with, 1-106
Formalin, a poisonous preservative, 7-1291
Formica, an ant, 11-2970
Formica fusca, an ant, 22-5813
Formicarium, home for ants, 13-3962
Formulas, graphic, of chemistry, 7-1695,
1811
Fornarina, La, and Raphael, 13-5099
"Forsoaken Marman", English poem, 23-6138
Forster, George, and Von Humboldt, 4-867
Fort Amsterdam, in New York, 13-5008
Fort Arnold, at West Point, 13-4735
Fort Camerosuni see *Victoria*, B. C.
Fort Carolina, massacre of, 2-276
Fort Chipewyan, in Canada, 13-4833
Fort Clinton, at West Point, 13-4735
Fort Dearborn, on site of Chicago, 22-5825
Fort Donelson, capture of, 3-789; 3-2047
Fort Duquesne, battle of, 4-896-97, 899
Fort Edward, 1-197
Fort Fisher, capture of, 3-2051-52
Fort Frontenac, capture of, 4-899
La Salle and, 3-553
on site of Kingston, Ont., 3-559, 754
Fort Garry, Hudson's Bay Company's trading
post, 1-230, 5-1278; 3-2277, 13-4834;
21-5608-09
see also *Winnipeg*
Forth and Clyde Canal, owners objected to
steamer, 13-2490
Forth Bridge, over Firth of Forth, 1-23, 30,
3-612
Fort Henry, capture of, 3-2047
Fort Jackson, at New Orleans, 3-2048
Fort Lee, in New Jersey, 1-11
Fort McKenry, and Key, 13-3032
flag at, 21-5493
near Baltimore, 17-4465, 4468
Fort Nassau, on site of Albany, 3-528
Fort Necessity, building of, 4-896
Fort Niagara, capture of, 4-899
Fort Oswego, loss of, 4-899
Fort Pitt, building of, 4-898
Fort Resolution, Hudson's Bay Company post,
3-1917
Fortress Monroe, at Old Point Comfort, 23-5958
Fortis, Agricola's, 1-210, 2-470
and Congress, 3-1135
girl who held the fort, 7-1671
in New York, 13-5008-09, 5014
occupied by English, 3-1394
taken by Confederates, 3-2044
Fort St. Philip, at New Orleans, 3-2048
Fort Schuyler, flag at, 21-5493
Fort Severn, at Annapolis, 13-4737
Fort Stanwix, flag used at, 7-1658, 21-5493
near Oriskany, 4-1004
Fort Sumter, capture of, 3-787, 3-2056, 13-3492;
23-5863
history of, 3-2044, 2046-47
Fort Ticonderoga, history of, 4-899, 1000,
7-1832-33
Fortunes, telling, 20-5293
"Fortunes of Nigel", story of, 3-1497
Fort Washington, capture of, 4-1002
Fort William, fur-trading post at, 13-4932;
23-6118, 6120
see also *Canada*, railways and canals
Fort William Henry, story of, 1-196
taking of, 4-898-99
Forum, of Rome, 13-3075, 20-5272, 5274, 5282;
23-5929, 23-5982
Foscari Palace, in Venice, 3-1172
Fossil, exhibit of, 20-5332
study of, 4-864, 866, 868-69; 11-2915-17
Foster, Anthony, and Amy Robsart, 13-3881
Foster, Stephen Collins, negro-melodies of,
12-3051
poems: see *Poetry Index*
Fothergill, Dr., Quaker physician, 13-4216
Fotheringay, the, character in "Pendennis,"
13-3516
Fotheringay, castle of, 13-3142
Fouettard, Le Père, 3-2134
Foul: see *Baseball*, *Football*
Foundation, for honey-comb, 11-2852, 2855
Foundling Hospital, Handel and, 13-3286
Fountain, Columbian, 13-4674
in a jar, 23-6170
Fountain, little, 13-2571
playing of, 3-859
Fountain, Great, a geyser, 3-554
"Fountain of Time", by Taft, 13-4676
Fountain of Youth, quest of, 3-272
Fountain-pen, cleaning a, 17-4494
making a, 22-5875
Four Cantons, Lake of the, in Switzerland,
12-2986
Foursome, a golf-match, 12-3511
Fourteen Foot Bank, lighthouse on, 3-749
Fourteenth Amendment, of the Constitution: see
Constitution, United States
Fourth of July, a holiday, 17-4470-71
see also *Independence Day*
Fowl, and the jewel, 3-580
carving the, 20-6184
game, 3-1558
Honorius and his, 3-2315
origin of domestic, 3-1557
Fowler, Sir John, bridge-builder, 1-24
Fowl-house, building a, 13-4711
Fox, George, founder of the Quaker sect,
22-5924-36
Fox, Gilbert, an actor, 13-3052
Fox (William Johnson), English statesman,
3-1120
Fox, an animal, 1-154, 161; 13-4060
and bear, 3-1105; 19-4990
and boar, 13-3878
and crow, 2-503
and faithful horse, 4-975
and frog, 15-4056
and geese, a game, 13-4712
and goat, 13-3370
and grapes, 3-580
and kitten, 3-1525
and lion, 13-3370
and mink, 3-2317
and *viscachas*, 3-682
and wolf, 3-2404
Brer, 3-1621
changes coat, 13-3444-48
dogs descended from, 24-6320
fur of, 13-5074
home of, 21-5572, 5574-76
in story, 4-888
in the hole, 13-3966
in the well, 2-504
poems about, 3-549
preys on other animals, 3-805
repaid in his own coin, 2-494
silver, 13-4837, 19-5070
speech of, 21-5507, 5510
see also *Flying-fox*, *Reynard the Fox*
Fox-cub, in race, 13-4612
Foxglove, a plant, 13-3816, 3889, 3896, 13-4657,
4660
Fox River, exploration of, 3-278, 23-6112
Fox-sparrow, a bird, 13-3460
Foxtail, a grass, 3-1342, 13-3057
Fracture, a green-stick, 10-2465
of bones, 13-4288; 17-4382
"Fragments on Recent German Literature", by
Herder, 13-3395
Fram, ship, 21-5460, 5464
Frame, for bee-hives, 11-2853, 2855
for garden, 13-3903
"Framley Parsonage", by Trollope, 3-2328
France, King of, Shakespearean character,
3-329, 3-541
France, affected by Calvin, 14-3544
and Algeria, 13-4025
and America, 4-993, 1006; 12-3004, 3006
and Corsica, 17-4359
and England, 3-556, 559, 770-72, 774-75; 4-360,
992, 1043, 5-1112-15, 1118; 6-1294, 1296;
3-2286, 2288, 2426; 13-3140
and Germany, 3-2426
and Italy, 13-3080
and King of Rome, 3-360
and Louisiana, 3-1397
and Netherlands, 14-3546
and Northmen, 14-3652
and St. Domingo, 13-4800
and the Panama Canal, 21-5593
and United States, 3-1393, 1396; 13-3439
Arabs in, 13-3558
arms of, 7-1658, see also *Fleur-de-lys*
art in, 13-4178
badge of, 7-1657
beginnings of, 3-2067
birth-rate, 7-1656
butter in, 3-1132
Chamber of Deputies, 3-2423-25

GENERAL INDEX

- France, cheese in, 5-1132
 Christianity in, 10-3550
 Christmas in, 8-2184
 colonies of, 8-2425
 costume of, 12-3434
 councils of, 8-2425
 crown jewels of, 24-6382
 cutlery in, 18-4302
 disease in, 11-2802
 during Seven Years' War, 17-4555
 empires of, 9-2288, 2290
 fisheries of, 15-3841
 flag of, 9-2291; 21-5494
 forestry in, 22-5811
 fossils of, 14-3667
 furniture of, 23-6177
 government of, 9-2423, 2425
 grasses of, 5-1343
 history of, 1-130, 132, 137; 2-434; 3-592, 594; 4-1042; 7-1862; 10-2508; 12-3344
 in Africa, 2-302; 16-4302, 4304, 4307-08
 in Mexico, 17-4402
 in modern times, 9-2415
 in New World, 1-324; 2-276, 282; 3-553; 4-832-93, 900
 in West Indies, 23-6048
 indemnity of, 9-2290; 10-2600
 inheritance in, 14-3781
 islands of, 6-1485
 legislature of, 8-2425
 linen in, 10-2686
 map of, 8-2067; 9-2414
 ministers of, 9-2425
 Moors in, 13-3339
 mourned Franklin, 8-2165-66
 Nursery Rhymes of: see Poetry Index
 ostrich-farms in, 6-1506
 oysters in, 15-3853-54
 people of, 9-2419
 population of, 9-2421-25
 president of, 9-2425
 religious liberty in, 10-2555
 Republics of, 6-1394, 9-2290-91; 16-4104, 4108
 Revolution of, 4-1004; 5-1187, 1313, 6-1394; 8-2073, 9-2279, 2282; 10-2488, 2596; 14-3547; 18-4156, 4160, 17-4359; 21-5537; 23-6044
 revolutionists of, 16-4099
 Roman church in, 10-2552
 senate, 9-2425
 silk industry in, 7-1829
 states-general of, 8-2071; 9-2280; 16-4100, 4102
 taxes in, 9-2279
 war with Austria, 1-132; 10-2561; 16-4102; 17-4360, 4364-65
 war with Charles V, 10-2556
 war with Prussia, 10-2561; 16-4102
 war with Russia, 14-3728
 war with Spain, 8-2068
 wheat in, 5-1132
 see also Fleur-de-lys, Franco-Prussian War, French and Indian Wars, Joan of Arc, Marseillaise, Napoleon, etc.
 Francoise Comte, history of, 10-2559; 22-5850
 Francis, country of the Franks, 8-2068
 Francis, St., story of, 4-1022-23
 Francis, Duke of Tuscany, death of, 10-2561
 Francis II, emperor of Austria, and Holy Roman Empire, 10-2561, 2596
 Francis I, king of France, and barons, 8-2072
 and Bayard, 1-138
 and Charles V, 10-2556
 and Henry VIII, 4-857
 and Italy, 12-3082
 and New World, 3-553-54
 builder of the Louvre, 21-5535
 encouraged art, 16-4173
 Francis II, king of France, and Duchess of Ferrara, 14-3695
 and Mary Stuart, 8-2072
 as dauphin of France, 12-3132
 Francis, king of Germany, in story of Lion-garden, 21-5477
 Francis Joseph I, emperor of Austria, 11-2895, 2905-06; 21-5654
 Francis Joseph Glacier, in New Zealand, 6-1487
 Francis Xavier, St., and the Jesuits, 15-4029, 4038
 hymn of, 8-2013
 Franco-Prussian War, and Bonheur, 14-frontis.
 and Paris, 21-5536
 Clara Barton and, 12-3123
 history of, 9-2290; 10-2595, 2598
 Frankfurt, Boone monument at, 24-6255
 Frankfurt-on-the-Main, German town, 11-2768
 Frankfort, Treaty of, and peace, 10-2600
 Franklin, Benjamin, American writer and statesman, 4-1003; 6-1610; 8-2161, 2164-66; 10-2435, 2438; 11-2711
 and fire-companies, 22-5757
 and Pennsylvania University, 17-4568
 as minister, 10-2444
 delegate to convention, 6-1391-92
 work in France, 12-3004
 Franklin, Sir John, Arctic explorer, 21-5457-58
 Franklin, battle of, 8-2053
 Franklin, District of, in America, 5-1281
 Franklin Institute of Pennsylvania, medal of, 22-5688
 Franklin Square, in New York, 19-5012
 Franklin, State of, in America, 7-1834
 Franks, and Genevieve, 9-2348
 at Chalons, 10-2550
 German tribes, 8-2068-69; 12-3076; 14-3541; 21-5534
 land of: see France
 Franz Josef Land, in Arctic, 21-5456, 5460
 Fraser, Bob, and cougar, 23-6131
 Fraser, Simon, fur-trader, 18-4831
 Fraser River, discovery of, 18-4831
 salmon of, 15-3954
 scene on, 22-5781
 Frances' Tavern, in New York City, 19-5014
 Fréchet, Louis, Canadian poet, 18-4324, 20-5296
 Freckles, cause of, 15-4020
 Fred, character in "Christmas Carol," 9-2197
 Freda, and the peasants, 21-5473
 Frederick, character in "Old Curiosity Shop," 11-2773
 Shakespearean character, 3-637
 Frederick, elector of the Palatinate, 10-2558
 Frederick, elector of Rhine Palatinate, 11-2901
 Frederick I, Barbarossa, Holy Roman Emperor, and Crusades, 15-3860
 and Italy, 12-3076, 3078
 chandelier of, 11-2766
 reign of, 6-1563; 10-2553-54; 18-4796
 Frederick II, German emperor, and Crusades, 6-1555
 Frederick I, king of Prussia, grandfather of Frederick the Great, 10-2557; 17-4549
 Frederick II, the Great, king of Prussia, and Bach, 13-3286
 and dead horse, 17-4345
 and soldier, 23-6196
 annexations, 10-2593, 2596; 11-2902, 2904-05
 comment on Frederick I, 10-2557
 equestrian statue of, 11-2762
 life of, 17-4550
 Russia and, 14-3726, 3728
 story of, 17-4549
 travels of, 10-2557
 Frederick III, emperor of Germany, 10-2599, 2600
 Frederick III, emperor of Austria, 11-2898
 Frederick IV, burgrave of Nuremberg, 10-2560
 Frederick IV, king of Denmark, 14-3656
 Frederick VII, king of Denmark, 14-3658
 Frederick VIII, king of Denmark, monument to, 14-3660
 Fredericksburg, battle of, 8-2050
 Frederick William, the Great Elector, planned Berlin, 11-2761
 Frederick William, king of Prussia, father of Frederick the Great, 17-4549-52
 Frederick William I, as elector of Brandenburg, 10-2560
 Frederick William II, king of Prussia, alliance with Austria, 10-2561
 Frederick (William II), king of Prussia (son of Frederick William I of Brandenburg), 10-2560
 Frederick William IV, of Prussia, and the Hohenzollern Castle, 17-4551
 Fredericton, capital of New Brunswick, 21-5407, 5548
 Free, Micky, character in "Charles O'Malley," 12-2978
 Freedman, a former slave, 11-2939
 Freedom, a statue, 18-4670
 Freeman, Mary W., American writer, 8-2095, 2102
 Free Men: see Franks
 Freesia, for potting, 6-1602
 Free Towns, lost independence, 10-2561
 Freight, in St. Mary's River, 18-5125-26
 "Friedschütz," by Weber, 18-4284
 Fremont, John C., and California, 7-1844
 exploration of, 7-1842

GENERAL INDEX

- French, Daniel G.**, American sculptor, 18-4667, 4669-70
- French**, and Australia, 2-366
- at Navarino, 12-3240
- fishing rights, 24-6294
- in America, 2-531; 3-780; 11-2784; 16-4078
- in Brazil, 20-5268
- in Canada, 2-756, 758; 14-3732; 18-4832; 22-5946; 24-6345
- in India, 7-1716; 16-4078
- in Mexico, 10-2443
- in Spain, 2-1953
- in West Indies, 23-6048
- kill storks, 2-1975
- see also France
- French-and-English**, a game, 5-1113
- French and Indian War**, English colonies during, 4-895
- in America, 4-898; 7-1841; 11-2784; 17-4555
- Washington during, 3-780
- French-Canadians**, history of, 20-5296
- party in Canada, 5-1271
- French Guiana**, in South America, 2-2426; 12-4603; 23-6048
- French language**, early use of, 2-2071
- in Quebec, 20-5296, 5301
- in Russia, 15-3798
- little picture-stories in, 9-3376; 10-2697; 11-2928; 12-3174; 13-3336, 3382, 3471; 14-3738; 16-4082, 4296; 17-4358; 18-4714
- object-lesson in, 10-5134
- picture-lesson, 13-3172, 19-4930; 20-5392; see also Dining-room, etc., in French
- play in, 5-1300
- spoken in England, 3-589
- stories in, 18-4737; 19-4973; see also *Esop*, fables in French
- used in England, 15-3936
- see also Story-Dictionary
- Frenchman**, and Quaker, 4-1064
- French River**, explored, 3-556
- French Somaliland**, in Africa, 16-4308
- Fresco**, paintings on plaster, 17-1590
- Fretwork**, bracket of, 20-5253
- Frya**, goddess of peace and plenty, 1-95; 2-466
- Freytag**, Gustav, German writer, 13-3399
- Friar**, in "Canterbury Tales," 15-3939
- Friar-bird**, oriole resembles, 13-3453
- Friars**, and St. Dominic, 15-4034
- wear sandals, 12-3106
- Fribourg**, Swiss town, 12-2986
- Friction**, aids walking, 14-3684
- and a stream, 16-4273
- and feet, 10-2472
- and lead-pencil marks, 15-4024
- and matches, 9-2428
- effect of, 3-624, 809; 12-3146, 3148-49
- generates heat, 10-2540
- of waves, 4-1081
- stops pendulum, 14-3572
- "Friday," servant of Crusoe, 5-1222, 1229
- Friday**, day of the crucifixion, 5-1289
- name of, 1-95; 2-466
- Friedland**, 2-2285
- Friend of the People**: see Marat
- Friends**, religious sect, 22-5936
- Friends**, unseen, 4-905
- who were not divided, 12-3071
- Friesland**, laws of, 14-3542
- Frieze**, of the Parthenon: see Parthenon, sculptures of
- on Temple of Apollo, 16-4171
- Frigate-bird**, of the tropics, 7-1644-45
- Frigates**, American ships-of-war, 12-3004, 3006
- Frigga**, Scandinavian goddess, 1-95
- Fringe**, of flag, 21-5492
- Fringillidae**, a bird-family, 2-2345
- Frisians**, in the Netherlands, 14-3541
- Frith, John**, death of, 19-5094
- Fritillary**, a butterfly, 12-face 3011, 3020
- Fritillary**, a plant, 15-4949, 4952
- Frobisher**, Martin, explorer, 2-281; 21-5457
- Frook**, for doll, 5-1101
- Frog**, of horse, 23-6063
- Frog-bit**, a plant, 19-4948
- Frog-footmen**, characters in "Alice in Wonderland," 12-3090
- Frog-hopper**: see Cuckoo-spit
- Frog-orchid**, a plant, 17-4479
- "Frog Prince," authorship of, 6-1478
- Frogs**, after rain, 1-165
- amphibians, 2-672-73, 674; 5-1209, 1215, 1220
- and bull, 18-4666
- and the fox, 18-4056
- and weather-telling, 12-2998
- Frogs**, boys and the, 2-3217
- communication of, 21-5510
- development of, 14-3666
- do not change, 10-2470
- ears of, 1-185
- electrical experiments with, 2-2166
- fishing-frog: see angler-fish
- hibernation of, 24-6374, 6376
- jumping-frog, 22-5920
- made from circles, 2-1607
- problems concerning, 4-850; 6-1601
- protective devices of, 12-3455
- skeleton of, 10-2444
- skins for leather, 11-2834
- that became a prince, 5-1353
- two, 12-3504
- who wanted a king, 2-503
- will not become another animal, 10-2470
- Frog-spit**: see Cuckoo-spit
- Froissart (Jean)**, history of, 3-773
- Frollo**, ship, 2-1398; 12-3008
- Front-de-Bœuf**, Megalad, 7-1664
- Front**, guarding fruit from, 3-652
- work of, 10-2527; 19-4933
- Frost-bite**, chilblains form of, 2-2083
- treatment for, 19-5032
- Froth**, insect-dwelling of, 12-3196
- Froth-ay**: see Cuckoo-spit
- Froth-hopper**: see Cuckoo-spit
- Froua**, Prince, in story of Enchanted Horse, 4-973
- Fructose**: see Levulose
- Fruit**, and vegetables, 23-5992
- blossoms in winter, 10-2582
- care of, 17-4388, 4499
- construction of, 16-4134
- damaged by birds, 2-2112, 2113
- dried in Greek trade, 13-3240
- eating skin of, 22-5890
- how to keep it fresh, 15-3901
- insects injurious to, 12-3204-05
- marking name on, 24-6281
- of Canova, 20-5382
- of marzipan, 14-3552
- of plants, 12-4205
- out of drawing, 10-4925
- problem concerning, 2-491
- stains of, 21-5844
- stones inside of, 2-2083
- sugar in, 3-703-04
- taste of, 18-4815
- trees killed by ants, 11-2970
- where it comes from, 3-649
- Fruit-bat**, of the tropics, 3-803
- see also Bats
- Fruit-farming**, in Canada, 22-5780
- Fruit-sugar**: see Levulose
- Fry**, Elizabeth, prison-reformer, 5-1329; 22-5936
- Fuchs (Leonhard)**, German botanist, 20-5235
- Fuchsia**, a plant, 3-617; 4-844; 14-3786; 20-5222
- varieties of, 20-5235
- Fudge**, kinds of, 5-1251
- Fuel**, contains hydrogen, 5-1190
- for fire, 15-4015
- hydrogen makes best, 5-1244
- the best, 14-3775
- see also Jack, house of
- Fuel-foods**: see Food, and its uses
- Fuentes d'Onoro**, battle of, 17-4368
- Fugitive Slave Law**, in United States, 2-2043; 13-3492
- Fugues**, of Bach, 13-3286
- Fulk**, of Anjou, 6-1553
- Full-back**: see Football
- Fuller, George**, American painter, 10-4250
- Fuller, Margaret**, American writer, 2-2096
- Fuller, Thomas**, comment on Gotham, 16-4126
- Fulton, Robert**, and his steamboats, 1-80; 6-1397; 10-2486-90; 13-3490
- inventions of, 11-2712
- submarine of, 22-5857
- Fulton's Folly**, steamship, 10-2490
- Fundamental Constitutions**, form of government, 2-531
- Fundy Bay** of, 20-5386; 21-5544, 5546, 5547
- tides of, 1-224, 225
- Funeral customs**, of Indians, 10-2578
- Funeral pyres**, in India, 6-1636
- Fungi**, a group of plants, 10-4381-82
- Fungus**, cultivated by ants, 11-2972
- growth of fungi, 18-4689
- kills flies, 12-3201
- kills insect-life, 15-3894
- Fungus-disease**, of fish, 7-1741
- Funnel**, of ship, 10-4620

GENERAL INDEX

Funny-bone, is a nerve, 10-2049; 14-3595; 18-4816
Fur-bears: see **Seals**
Furnace, for making iron and steel, 22-5689, 5693, 5696
 of locomotive, 2-304
Furness, Harry, illustrated "Alice in Wonderland," 11-2953
Furniture, cause of night-noises, 18-4817
 for doll, 7-1732, 1850
 makers of, 22-6172
 of boxes, 8-2035
 of Washington, 6-1392
 that saved the train, 19-4973
 woods used for, 19-5034
 see also **Box-furniture**
Furor, character in "Faerie Queene," 3-699
Furs, from American colonies, 4-994
 in Russia, 15-3797
 of beaver, 3-680
 of coypu, 3-680
 of seals, 4-1076
 of Siberia, 14-3724
 same structure as hair, 1-166
 where they come from, 19-5071
 see also **Fur trade**
Further India, natives of, 8-1930
Fur trade, and development of new countries, 18-5072
 Dutch, in America, 2-528
 in America, 2-278
 in Canada, 1-230; 3-554, 556-58; 18-1831
 of France, 4-893
 organization of, 18-4836
Fury, Sergeant, and rioters, 18-4624
Furns, and pea family, 16-4132, 4135
Fusel-oil, is alcohol, 7-1890
Fust, John, and Gutenberg, 14-3609, 3611
Future, knowledge of, 21-5514
Future Kingdom of, in "Blue Bird," 22-5839
Fyke-net: see **Net**, for fish

G

"**Gabrielius Man**" see **Ochiltree**, **Edie**
Gabriel, and Schamyl, 12-3001
Gabriel, Archangel, 12-3030, 3-10; 22-5879
Gades, an island, 20-5186
 see also **Cadiz**
Gas-fliers: see **Hot-air**, **Horse-fliers**
Gadsden Flag, of America, 21-5492
Gadsden Purchase, from Mexico, 13-3192
Gads Hill, Dickens' Home, 8-2327
Gaelic, Celtic language, 1-224, 2-477
Gaz, of ship, 15-3959; 18-4620
Gage, General Thomas, British commander, 4-998-99
"Gaily the Troubadour touched his Guitar,"
 song, 14-3769
Gainsborough, Thomas, English artist, 3-763, 766
 pictures of, 3-767; 4-frontis.; 17-4591, 1596
Gairfowl, character in "Water Babies," 18-3839
Gaius: see **Caligula**
Galahad, Sir, character in "Table Round," 4-885
Galata, part of Constantinople, 13-3241
Galata Bridge, in Constantinople, 13-3241
Galatea, and Pygmalion, 4-980
"Galatea," written by Cervantes, 20-5311
Galba, Roman soldier, 2-538
Gale, blows trees over, 4-921
 resting in, 18-4015
Galen, Greek doctor, 6-1593; 18-4625, 4628
Galena, in Canada, 21-5613
Gallcia, province of Austria, 11-2895, 2904
 province of Spain, 12-3339, 3346
Gallians, in Canada, 21-5610; 22-5946
Gallilee, lake, in Palestine, 18-3856
Gallies, and falling balls, 14-3591
 and movement of earth, 17-4482
 and pendulum, 14-3589
 and planets, 9-2394
 and sun-spots, 8-2039; 22-5995
 and thermometer, 17-4295
 and vacuum, 18-3978
 and Venus, 11-2802
 Italian astronomer, 1-145; 2-318; 7-1678-79; 8-1963
 visited by Milton, 22-5676
 wrote in Latin, 12-3231
Gall, St., Irish missionary, 12-2956
Gallard, character in "Abbe Constantine," 12-4753
Gallatin, Albert, American statesman, 10-2437, 2439
Gallaudet Group, by French, 12-4670
Galleons, Spanish, 2-280; 17-4514; 22-6042
Gallery, the Whispering, 17-4582
Galleys, of a ship, 12-4630
Gall-flies, behavior of, 10-2475
Gallinules, birds, 8-3341
 egg of, 7-face 1756
Gall-mites, injure trees, 12-3364
Gall-ants, for ink, 12-3479
Galls, on oaks, 10-2475
Galops, rapids, 22-6123
Galton, Sir Francis, comment on Dead Sea, 22-5814
 experiments with whistles, 19-4872
Galvani, Luigi, Italian scientist, 8-2161, 2166
Galveston, city in Texas, 22-5713; 22-5962
 medical school at, 17-4572
Gama, Vasco da, discoveries of, 1-65; 16-4302
Gambetta (Leon), statue of, in Paris, 21-5535
Gamboge, a color, 10-2696
Gams, dogs and, 24-6328
 pig that retrieved, 21-5510
Game-birds, various, 9-2341
"Game-cook:" see **Sumter**, **Thomas**
Games, an amusing word-game, 12-2994
 and the body, 12-3181
 ball-games for the garden, 8-1603
 blindfold, 19-5035
 fireside, 1-253; 9-2143; 19-4931
 for a Christmas party, 22-5919
 for boys, 19-5122
 for children's garden party, 16-4292
 for out-of-doors, 14-3642
 meaning for children, 14-3691
 of Colonial children, 4-965
 of cup-and-ball, 22-6170
 of Egyptians, 18-4849
 of Greece, 20-5201, 5206, 5208
 of Indians, 11-2782
 of making rhymes, 21-5444
 of sticklerchief, 14-3553
 of thinking, 21-5564
 of what is wrong? 20-5252
 Olympic, 7-1819
 out-door, 14-3556
 out-door, for boys, 15-3966
 played with dominoes, 18-4044
 played with hoops, 18-4040
 proverb, 20-5354
 represented by pictures, 21-5153
 Roman, 20-5278
 some favorite garden, 5-1096
 to be played in the nursery, 10-2589
 to be played out-of-doors, 3-618, 735
 to play at a party, 5-1303; 8-1938
 to play in the hay-field, 16-4203
 to play on a train, 12-2995, 23-6078
 to play on the beach, 19-5121
 to play with atlas, 13-3321
 to play with marbles, 19-5132
 twenty ways of counting-out, 6-1604
 what is it? a game, 10-2528, 2558; 21-5449
 what-is-its-name? a game, 11-2312, 2875
 where is it? a game, 9-2362; answers, 10-2523
 who are these people? 17-4384
 why is it? a game, 10-2588; 11-2720
 with corks, 23-6163
 with date stones, 23-6102
 with music, 12-3117
 with skittles, 23-6168
 see also **Ball-games**, **Things to Make and to Do**, and **individual names of games**
Gamp, Mrs., character of Dickens, 9-2320
Gannet, David, a singing-master, 1-197
Ganges River, in India, 6-1621-32, 1635; 7-1719; 21-5416
Gangrene, of wounds, 12-4634; 24-6365
Gannets, birds, 7-1644-46
Ganoidea, bony fishes, development of, 14-3666
Ganymede, Tennyson's, 7-1688
Gap, Filling the, a game, 3-618
Gap, town in France, 2-794
Gaz, the short-nosed, 10-2701
Garages, and smoking, 22-5762
Garcia, Manuel, singing-teacher, 24-6355
Garde, of Marseilles, 9-2382
Garde Nationale: see **Guard**, **National**, of France
Garden-cities, building, 11-2908
"Gardener's Daughter," by Tennyson, 22-6036
Garden-gate, a game, 10-2559
Garden of the Gods, ants in, 11-3947
Garden of the Gulls: see **Prince Edward Island**

GENERAL INDEX

- "Garden of the Loves," picture by Titian, 17-4591, 4594
- Gardens, Camp-Fire Girls', caring for, 14-3755
- flowers of the, 20-5227
- for invalids, 23-6080
- games for, 5-1096; 6-1603
- hanging gardens of Babylon, 12-4989
- how the father divided, 10-2522, 2583
- of Hesperides, 4-1052
- of Pompeii, 23-6229
- tools for, 1-249
- Zoological, 1-14
- see also Little garden, month by month, Vegetable garden
- Garden-seat, making a, 12-3214
- Gardes du Roi, Les! see Swiss Guards
- Gardiner, Colonel, in "Waverley," 6-1499-1500
- Garfield, James A., as president, 9-2378, 2382
- assassination of, 12-3488-93
- Garibaldi (Joseph), Italian patriot, 1-131, 7-1658; 12-3086
- Garland, character in "Old Curiosity Shop," 11-2773
- Garnet, precious stone, 24-6377, 6379, 6382-83
- Garonne, river in France, 9-2418, 2422
- Garriok, David, as song-writer, 14-3766
- couplet on Goldsmith, 7-1752
- English actor, 10-2619; 16-4157; 19-4726-27
- Garrison, William Lloyd, American abolitionist, 8-2043; 13-3491
- Garter, fly the, 15-3966
- tight, 16-4617
- Gary, Blascoe, and model of steamboat, 10-2489
- Gascoigne, Chief Justice, and Prince Henry, 16-4662
- Gascons, a people in France, 9-2424
- Gases, and heat, 5-1244-45; 17-4393
- and water, 2-376, 519; 14-3685
- as elements, 5-1318
- before earth, 13-3508
- behavior of molecules and atoms, 14-3680; 22-5893
- characteristics of, 15-3977, 3984
- cohesion of, 3-608
- diffusion of, 17-4486
- early stage of earth, 2-324; 13-3508
- form of matter, 4-851
- gas called fire-damp, 4-839
- gas makes balloon rise, 2-420; 4-914-16
- generated by gunpowder, 9-2244
- illuminating, 6-1432
- in air, 4-956; 8-1160-61; 20-5294
- in blood, 6-1597
- in coal, 10-2638
- in flames, 4-917-18, 957; 9-2246, 2248
- in guns, 23-6149
- in kettle, 4-913
- in nebulae, 11-2842, 2844
- in rocket, 20-5291
- in spectrum, 11-2741
- injurious to health, 7-1805
- kinetic theory of, 13-3427
- liquefied, 16-4086
- of body, 6-1429, 1461
- of boiling liquids, 16-4273
- of breath, 2-325; 9-2248-49
- of burning candle, 14-3681
- of sun, 8-2090
- or vapors, 13-3390
- pressure of, 6-1589
- specific gravity of, 15-3828
- three wonderful, 8-1243
- thrown off earth, 6-1591
- see also Coal-gas, Laughing-gas, Natural-gas
- Gas-flame, blue and yellow, 7-1878
- colder inside than out, 7-1879
- moves things, 12-4693
- Gas-holder, a tank, 2-416-18
- Gasell, Mrs. Elizabeth Claghorn, English author, 10-2921-23
- Gaslight, and colors, 17-4372
- manufacture of, 8-415
- using of, 3-664-67
- Gasoline, and fires, 22-5762
- and motor-cars, 7-1787
- and petroleum, 10-2680
- from crude oil, 16-4169
- Gaspe, Cartier at, 3-554
- Gastropods, development of, 14-3665
- Gaston, and Madeline of the Fort, 7-1672
- Gastropods, sea-animals, 10-2611
- Gates, in "Feharan," 16-3859
- of Baptistery, 11-2756, 2794; 16-4173
- of Lions: see Lions, Gate of, etc.
- Gates, William M. W., poems: see Poetry Index
- Gates, Rebecca, during the Revolution, 6-1600-01, 1004, 1005, 1008
- "Gates Ajar," by Phelps, 9-2100
- Gateway of the West, at Kansas City, 22-5712
- Gathers, how to make, 2-490
- Matling, Dr. Richard, and machine gun, 11-2713
- Gattamelata, statue by, 16-4173, 4176
- Gatun, tugboat, 21-5595
- Gatun Dam, and the Panama Canal, 21-5592
- Gatun Lake, in Panama, 21-5597, 5600
- Gatun Locks, in Panama Canal, 21-5597, 5600
- Gauchos, herdsmen, 18-4603, 4610; 20-5264
- Gaugamala: see Arbela, battle of
- Gauge, of railway, 10-2475
- Gaul, St., Irish missionary, 21-5552
- Gaul, and the Germans, 10-3550
- comment on, 9-2415
- gold in, 20-5318
- history of, 9-2067; 9-2347
- kings of, characters in "Table Round," 4-581
- see also France, history of
- Gauls, and Dipper, 13-3374
- and Rome, 8-576; 14-3694; 20-5274, 5278, 5281
- Gauss, ship, 21-5459
- Gautama, founder of Buddhism, 12-3023
- Gause, in safety-lamp, 16-4809
- Gaveston, Piers, king's favorite, 3-771, 773
- Gavial, a reptile, 5-1213
- Gay, John, poems: see Poetry Index
- Gay, Walter, character in "Dombey & Son," 10-2567
- Gazelles, capturing, 24-6244
- Ge, the earth, 9-2249
- Geai Vaniteux, 17-4347
- Geats, king of the: see Hygelac
- Gebel-Tarik: see Gibraltar
- Gecko, a lizard, 5-1211
- flying, 5-1212
- Geese, origin of domestic, 6-1557, 1565-66
- sacred, of Rome, 14-3594; 20-5274
- who kept guard of Rome, 3-576
- Geiranger Fjord, in Norway, 14-3659
- Gelsamer, oak of, 15-4031
- Gelatin: see Isinglass
- Gelert, the faithful dog, 20-5285
- Gellée, Claude: see Claude Lorraine
- Gemini, a constellation, 10-2642
- Gem of gems: see Sapphire
- Gems, and aluminum, 10-2680
- electricity and, 9-2162
- for magnifying glass, 9-2281
- the king and the queen of, 24-6380
- see also Stones, precious
- Genappe, Napoleon at, 13-3500
- General Grant, ship in "Round the World," 19-4916
- Generals, of France, 8-2076
- titles of, 3-789
- Generator, for electricity, 11-2715; 24-6352
- Generators, for gas, 2-418
- "Generosity," by Edgeworth, 10-2621
- Genesis, and Babylonian tablets, 19-4967
- Geneva, Swiss town, 12-2993
- Geneva, Lake, in Switzerland, 12-2980, 2982, 2984
- Geneviève, saved Paris, 9-2347
- Genistas, care of, 14-3786
- Genoa, Gulf of, 12-3074
- Genoa, Italian sea-port, 11-2787; 12-3078, 3086-87, 3190; 17-4359
- Gensheisch, John: see Gutenberg, John
- Gentians, plants, 16-4136; 19-5090
- Gentiles, and the Jews, 24-6322
- "Gentleman's Magazine," and Johnson, 12-4727
- Geologists, what they are, 6-2081
- Geology, exhibit of, 20-5332
- science of, 4-868; 9-2243; 11-2913
- Geophilus, a centipede, 13-3357
- George, St., and dragon, 1-219; 4-978
- character in "Faerie Queene," 3-697-99, 701
- cross of, 4-1043; 5-1239; 9-1951; 9-2354; 21-5492
- history of, 9-2354
- statue by Donatello, 11-2787, 2796
- George I, king of England, accession of, 14-3766
- and Lady Nithsdale, 9-2235
- and Steele, 18-4726
- as elector of Hanover, 10-2560
- reign of, 8-1113; 7-1865
- George II, king of England, character in "Henry Esmond," 12-3314
- death of, 17-4555
- Georgia named for, 2-592
- reign of, 8-1114

GENERAL INDEX

- George III**, king of England, and American colonies, 4-995, 998; 8-1114-15; 8-1389 and Canada, 18-4079 made peace with France, 17-4555 statues, 4-1002; 18-5008 watch of, 20-5173
- George IV**, king of England, and Henry Russell, 14-3768 and his queen, 18-4688 lived in Carlton House, 8-1262 reign of, 8-1115
- George V**, king of England, ancestry of, 12-3134 and Delhi, 8-1636 in India, 7-1712, 1715 reign of, 8-1120
- George I**, king of Greece, 14-3660
- George of Denmark**, and Steele, 18-4726
- George Peabody College for Teachers**, in Tennessee, 22-5962
- Georgetown, D. C.**, 7-1688
- Georgia**, cotton manufactures of, 10-2684 description of, 23-3588 during Revolution, 4-998, 1006-07; 8-1389, 1392 flower of, 22-5815 gems from, 24-6379 history of, 2-274; 7-1836; 9-2377; 18-3860 marble of, 10-2680 peaches in, 3-649 secession of, 8-2044; 13-3492; 23-5057
- Georgia (kingdom of)**, added to Russia, 14-3728
- Georgia**, ship, 8-2052
- Georgian Bay**, out of Lake Huron, 23-6120
- "Georgics"**, of Virgil, 20-5308
- Geraint**, and Enid, 8-1988
- Geraldin**, Lord, character in "Antiquary," 7-1670
- Geraniums**, cultivation of, 3-617; 4-844; 8-1098; 14-3554; 18-3903 family of plants, 17-4352 origin of, 20-5228 varieties of, 18-4185; 20-5233 wild, 12-3066
- Gerard Blasseon**, character in "Cloister and the Hearth," 18-4076
- Gerardson**, Gerard, character in "Cloister and the Hearth," 18-4069, 4076
- Germaneder-speedwell**, a plant, 17-4351
- German East Africa**, a colony, 11-2771; 13-4308
- German Empire**: see Germany
- "German Florence"**: see Dresden
- Germania**, a monument, 11-2768
- Germanicus**, nephew of Tiberius, 2-527
- Germans**, in America, 2-531; 7-1832; 8-2102 in Brazil, 20-5371 in Canada, 14-3732; 22-5946 in Gaul, 8-2068 in Iberian Peninsula, 13-3338 in Italy, 18-8082 in Switzerland, 12-2986 in the Antarctic, 21-5459 see also Germany
- German silver**, an alloy, 7-1888; 23-6092
- German Southwest Africa**, colony of, 18-4308
- Germantown**, battle of, 4-1006
- Germanus**, Bishop, and Genovève, 9-2347
- German West Africa**, a colony, 11-2771
- Germany**, alcohol and children in, 21-5440 and cornflowers, 7-1705; 22-5816 and France, 9-2289-90 and Gustavus Adolphus, 14-3653, 3656 and Morocco, 9-2426 and Samoa, 8-2156 animals of, 3-308 as it is to-day, 11-2761 beet-sugar in, 3-708 beginnings of, 10-2549 birth-rate, 7-1656 Bundesrat, 10-2600 city ownership in, 11-2909 colonies of, 11-2772 costumes of, 13-3434 cutlery and, 18-4801, 4802 disease in, 11-2801-02 duchies of, 10-2556 early history, 13-3298 emperors of, 7-1658; 10-2556 empire of, 10-2599-2600 fisheries of, 18-3841 flag of, 7-1658; 21-5494 folk-lore of, 8-1478 folk-songs of: see Poetry Index forestry in, 22-5811 government of, 10-2600 guns of, 23-6148 history of, 2-302; 10-2548; 17-4555
- Germany**, in Africa, 18-4308 in Turkey and Bulgaria, 18-3247 Jews in, 24-6334, 6338 lead in, 10-2680 legends of, 2-370 legislature of, 10-2600 making of, 10-2593 map of, 10-2592 national song of, 14-3772 northern states, 10-2598 population of, 11-2770 power of ruler, 8-1434 Reichstag, 10-2600 Roman church in, 10-2552 rye in, 8-1132 sculpture of, 11-2769 silkworms in, 7-1829 South German states, 10-2598 troops in France, 9-2280 walnut-planting in, 14-3743 see also Franco-Prussian War, Germans, Thirty Years' War, etc.
- Germs**, and infectious diseases, 4-817; 18-4018
- Gérôme, J. L.**, his picture of Colosseum, 22-5929
- Geronimo**, Arab slave, 23-6022
- German**, in Switzerland, 22-5347
- Gertrude**, queen of Denmark, Shakespearian character, 2-449
- Geryon**, a giant, 13-3374; 20-5186
- Gesner**, Dr. Abraham, and kerosene, 3-669; 16-1166
- Gessler**, tyrant, 7-1704
- "Gesta Romanorum"**, stories from, 21-5565
- Gettysburg**, battle of, 8-2050-51
- Gettysburg**, Address at, by Lincoln, 3-778
- Geyser Basins**, in Yellowstone Park, 3-584
- Geysers**, in Iceland, 14-3658 in Yellowstone Park, 3-584 what they are, 13-3254
- Ghee**, kind of butter, 23-6102
- Ghent**, city in Belgium, 14-3539, 3543, 3544, 3546
- Ghent**, Treaty of, and peace, 3-759; 8-1400; 10-2437; 13-3490
- Ghibellines**, Florentine faction, 11-2787; 12-3080
- Ghiberti**, Lorenzo, Italian sculptor, 11-2786-87, 2794; 18-1173
- Ghiseh**, pyramids of, 23-6180
- Ghost**, character in "Hamlet," 2-449
- Ghost**, reality of, 12-3225
- Ghosts**, characters in "Blue Bird," 22-5338 characters in "Christmas Carol," 9-2196, 2199, 2200, 2202
- Ghost-writing**, 22-5923
- Ghurkas**, natives of India, 7-1720, 18-4081
- Giaccini**, Giuseppe, Italian writer, 20-5315
- Giant**, a keyser, 3-587
- Giant Despair**, character in "Pilgrim's Progress," 8-1184, 1186
- Giantess**, keyser in Yellowstone, 3-587
- Giant Mountains**, in Germany, 10-2594; 11-2766
- Giants**, and Jack the Giant-killer, 7-1810 Cyclops, 1-75 giant and boy, 3-726 giant of the peak, 9-2403 giant with three golden hairs, 4-1077 of Burg Niedeck, 21-5473 Thrym, 1-94 see also Gog and Magog
- Giants Causeway**, in Europe, 19-4873; 20-5350
- Gibbon**, Edward, English writer, 18-4723, 4726, 4727-30 silhouette of, 21-5641
- Gibbon**, capture of, 24-6244
- Gibbon**, man-like ape, 8-627-28; 12-3131
- Gibeonites**, massacred by Saul, 22-5915
- Gibraltar**, apes of, 8-629 fortress of, 13-3337, 3339, 3346; 16-4307-08 Straits of, and Hercules, 18-4298; 20-5186
- Gibson (John)**, English sculptor, 16-4174
- Giddiness**, and semi-circular canals, 18-3999 cause of, 13-3513
- Gideon**, Biblical character, 24-6330
- Gig**, a vehicle, 23-6056
- Gilbert**, Sir Humphrey, and America, 2-281 and Raleigh, 21-5409; 24-6271 character in "Westward Ho!" 14-3715
- Gilbert**, William, English scholar, and electricity, 8-2161
- Gilder**, Richard Watson, poems: see Poetry Index
- Giles**, character in "Cloister and the Hearth," 18-4069 character in "Oliver Twist," 10-2565
- Gilgamesh**, Assyrian hero, 18-4967

GENERAL INDEX

- Giliaks**, Siberian tribe, 15-3803
Gill, Wilton L., and school-republic, 24-6390
Gill-arches, of fish, 15-4000
Gillnet, character in "Toilers of the Sea," 15-4225
Gill-net: see Nets, for fish
Gillot, Joseph, pens of, 13-3484
Gill-run-over-the-ground: see Ground-ivy
Gills, Solomon, character in "Dombey & Son," 10-2567
Gills, false gill, 7-1885
 of amphibians, 8-1209, 1214-15
 of crabs, 10-2612
 of fishes, 2-378; 4-917; 5-1209, 1214-15; 7-1886; 8-2410; 14-3666, 3781; 15-4000
 of fungi, 19-4882
Gill-slits, of fish, 15-4000
Gillyflower, the stock, 20-5234
Gimlet, use of, 2-384
Ginger, from West Indies, 23-6048
 wild, flowers of, 11-2882
Giocondo, Fra Giovanni, Venetian architect, 5-1170
Giorgione, Italian artist, 5-1174, 1178
Giotto, Italian artist, 5-1178; 11-2787-88, 17-4590, 4592
Gipsy-girl, of Russia, 15-3799
Gipsy-moth, injurious insect, 12-3195, 3206; 13-3307
Gipsywort, a plant, 19-4955-56
Giraffe, an animal, 1-152; 4-1013-15
 capturing the, 24-6240, 6244
 neck of, 10-2467
 spots of, 13-3148
 young of, 21-5666
Giralda, Moorish prayer-tower, 13-3342, 3347
Girardon (François), French sculptor, 16-4174
Girardot, Georges, his picture of Columba, 13-4788
Girders, moved by magnets, 21-5527, 5529
Girdle, of Hippolyte, 13-3374; 20-5186
 of Venus, 7-1710
Girl, a brave, 8-1955
 girls in Colonial times, 12-3120
 life of Indian, 1-18
 presents for a, 19-4926
 puzzle concerning girls, 1-110
 who nursed her dolls, 17-4384
 who saw the tsar, 10-2446
 who sold her hair, 15-4027
 see also Blue-birds, Camp-Fire Girls
"Girl I left behind me", parting song, 14-3768
Gironde, mouth of the Garonne, 9-2418
Gironde, political party, 16-4105-06, 4108
Gisborne, Thomas, poems: see Poetry Index
Gizeh, pyramids of, 13-4843, 4848
Gizzard, of birds, 9-2363
Gjos, ship, 21-6460
Glaciers, Alpine, 12-2982
 forming of, 10-2531; 15-3905
 in New Zealand, 6-1487, 1490
 in Norway, 14-3659, 3662
 movements of, 13-3250
 picture, 2-431
 prehistoric, of United States, 1-14-15
Gladiators, Roman, 11-2940; 20-5276, 5278
Gladstone, cultivation of, 6-1519; 7-1853, 20-5230, 5237
Gladstone, William Swart, English statesman, 15-5037
Glaefy, Annette von, romance of, 14-3772
Glanis Castle, camouflage before, 13-3508
Glands, adrenal gland, 23-6014
 ductless, 23-6014
 for hair-oil, 8-1982
 of the body, 6-1461, 1464, 1587; 15-3829
 of the bowel, 9-2868
 of the skin, 8-1923; see also Sweat glands
 of the stomach, 9-2364
 salivary, 8-2172; 23-5904; 23-6014
 that produce mucus, 9-2364, 2366
 thyroid gland, 23-6013
 see also Kidneys, Liver, etc.
Glasgow, Miles, American writer, 8-3101
Glasgow, and gas-lights, 9-687
Glass, and electricity, 9-2162-63
 bending of, 14-4278
 breaking of, 4-1086; 6-1418
 for imitation jewels, 24-6878
 in the United States, 10-2682
 in Yellowstone Park, 8-568
 made by Venetians, 8-1168
 magnifying, 8-3331
 making of, 8-1263; 20-5218
 mending, 16-4294
Glass, penetrated by light waves, 14-2780
 seeing through, 8-1284
 stained, in Farge and, 16-4221
 substances that scratch, 12-3230
 transparency of, 10-2664
Glassblower, work of, 8-1264
Glasses, musical, 17-4498
 see also Eye-glasses
Glass-snake, a lizard, 8-1211, 1218
Glassworkers, in Europe, 8-1263
Glasswort, a plant, 20-5213, 5218
Glate, history of, 17-4584
Glate, Della Robbia's, 11-2787
 of china, 17-4542, 4547-48
"Gleaners", picture, by Millet, 9-2419
"Globe", by Meunier, 16-4174
Glen, William, song-writer, 14-3770
Glenallan, Countess of, character in "Anti-quary," 7-1670
Glendower, Owen, Welsh hero, 1-128
"Glengarry Days", by Connor, 16-4327
Glennauolch, in "Waverley," 6-1489
Glders, form of flying-machine, 1-174-75
Globe, views of, 7-1767
Globe-fish, poisonous, 10-2609-10
Globe-flower, a plant, 18-4761
Globe Theatre, Shakespeare and, 21-5578, 5580
Globe-thistle, a plant, 20-5229, 5236
Globule, meaning of, 17-4372
Gloriana, character in "Faerie Queene," 3-697
Glory of the Snow, a plant, 20-5230
Glossin, Gilbert, character in "Guy Mannering," 6-1626
Glossina, the tsetse-flies, 12-3203
Gloster, Earl of, Shakespearian character, 8-642
Glotis: see Voice-box
Gloucester, Richard, Duke of: see Richard III, of England
Gloucester, England, fairy horn-cup near, 8-1395
Gloucester (Mass), fishing at, 10-2602, 20-5372
 seaport, 15-3842
Glover, Catharine, in "The Fair Maid of Perth," 8-1498
Glover, George W., married Mary Baker, 12-3121
Gloves, bag from, 23-6070
 case for, 5-1250
 fairys: see Foxglove
 folks: see Foxglove
 for baseball, 20-5248
 glove and the knight, 21-5477
 mending, 14-3556
Glow-lamp, electric, 3-668
Glow-worm, a beetle, 13-3298-99
 in bird's nest, 23-5752
 light of, 1-165; 5-1191; 21-5478
Gluck, in "King of the Golden River," 6-1439, 1527
Glucose, is grain-sugar, 3-704
Gins, containing rubber, 22-5795
 from cod, 24-6294
 use of, 5-1360
Glumes: see Scales of grass
Glutton: see Wolverine
Glyptodon, armor of, 1-50; 14-3670
Gnatcatcher, a bird, 9-2346
Gnats, injurious insects, 12-3199
 wings of, 9-2335
Gneiss, variety of rock, 20-5350
Gnomes, catching a thief, 9-2181
Gnus, capturing, 24-6244
Goals: see Football
Goar, St., and Rhine people, 16-4238
Goat-hair, use of, 11-2837
Goathead, of Switzerland, 22-5847
Goat Island, in Niagara, 3-690
Goat-moth, an insect, 12-3011, 3014, 3016
Goats, age of, 9-2350
 and zoo animals, 24-6242, 6244
 Brahman and the, 23-6133
 carried Malta fever, 11-2801
 denuded Mediterranean shores, 23-6001
 goat and the fox, 13-3370
 goat and the lion, 13-3504
 goat in a maze, 21-5453
 in story, 1-151; 7-1910
 made from a pear, 22-5741
 of Bedouins, 23-6098
 on Alps, 22-5848, 5845
 shadow-picture of goat, 20-5352
 skin for leather, 10-2686; 11-2834; 12-3105
 varieties of, 9-408-11
 why kept in stables, 1-215
 wild, in Canada, 1-232; 21-5661
Goats'-beard, a plant, 16-4013; 16-4136
Goatsucker, why nightjar is called, 1-215

GENERAL INDEX

- Gobi, desert of, 12-3122; 15-3926; 16-4121;
23-6097, 6100, 6104
- Goblin Land, 3-583
see also Hoodoos
- "Goblin Market," by Rossetti, 23-6039
- Goblins, characters in "The Chimes," 2-2299
houses of the, 1-264, 265; 9-2373
in story, 8-1352; 9-2403
in the gold-mine, 2-357
see also Music
- "God," in "Paradise Lost," 22-5679
works of, 6-1448
- Godavery River, in India, 6-1632
- Goddess, and the tree, 16-4866
- Go-devil, for cleaning pipes, 16-4169
- Godfrey, character in "Lohengrin," 21-5561
- Godfrey of Bouillon, crusader, 6-1551, 1555;
15-3860
- Godiva, Lady, and Coventry, 20-5226
- Godmother, fairy, 3-798
- Gods, models of Egyptian, 12-4844
of the Germans, 10-2549
- "God Save the King," English song, 14-3766,
3771
- Godspeed, ship, 2-522
- "Godunow, Boris," by Pushkin, 20-5314
- Godwin, Earl, and Edward the Confessor, 2-472
- Goeschene, in Switzerland, 22-5847
- Goethals, Col. George W., built Panama Canal,
1-84; 21-5598
- Goethe, Johann W., German writer, 13-3393,
3395-97; 20-5307, 5318
poems: see Poetry Index
- Gog and Magog, London giants, 5-1354
- Golia, a collic, 15-4052
- Golah Khan, Indian servant, 18-4800
- Goleonda, city in India, 6-1632
tombs of kings of, 6-1637
- Gold, alloys of, 7-1888
a metallic element, 5-1316-17; 6-1585
and Midas, 22-5683
and Spaniards, 2-274
and sulphur, 7-1792
dust of, magnified, 2-2336
early search for American, 2-521
fools, and Jamestown, 2-522
for coins, 17-4374
for handles, 18-4805
for pens, 13-3481; 22-5875
for pins, 18-5001
from Brazil, 20-5370
furnished by colonies, 4-994
history of gold-mining, 20-5317
in Alaska, 8-2148-49; 15-4058, 4061-62;
20-5319
in Australia, 6-1369-70, 1372-74; 16-4081
in British Guiana, 23-6048
in California, 7-1846-47; 13-3492
in Canada, 21-5544, 5548, 5612; 22-5780;
23-6092-93; 24-6296
in Mexico, 17-4400
in New Zealand, 6-1490
in Philippines, 8-2152
in Russia, 15-3798
in sea, 10-2651
in South America, 18-4604, 4606
occurrence of, 16-4111
of Upsall Castle, 8-1995
poisonous? 6-1585
production of, 10-2678
problem concerning, 3-736
Raleigh and, 21-5412-13
specific gravity of, 15-3828
value of, 6-1585
see also Klondike, gold in
- Gold Coast, of Africa, 20-5319
- Golden, riot at, 18-4624
- "Golden Age," painting, by La Farge, 16-4221
- "Golden Bull," a decree, 11-2900; 21-5654
- "Golden Deeds," by Yonge, 10-2627
- Golden Deeds, book of: see Tables of Contents
- "Golden Fleece," by Grillparzer, 13-3398
- Golden Fleece, quest of the, 1-203; 20-5318
- Golden Gate, entrance to San Francisco Bay,
5-1180
- Golden-Gate Cañon, in Yellowstone Park, 3-586
- Golden Gate Park, in San Francisco, 10-2689
- Golden Hind, ship, 2-280
- Golden Horn, arm of the Bosphorus, 12-3185-86;
13-3241, 3244
- Golden Mean: see Medina
- Golden River, King of the, 6-1528
- Goldensund, in United States, 20-5210, 5216;
22-5816
- state tower, 22-5816
- Goldfinch, a bird, 7-face 1752; 8-2104, 2112;
9-2350; 13-3458
and thistles, 16-4208
egg of, 7-face 1750, 1760
nest of, 22-5746
- Gold-fish, a carp, 10-2705-06
how to care for, 7-1739
- Goldlocks, and the golden crown, 19-5113
in story of three bears, 8-1201
- Gold-leaf, beaten out, 20-5319
- Gold-mine, goblins in, 2-357
- Gold Mountains, in Canada, 22-5778
- Gold Mountains: see Altai Mountains
- Gold roll, pay in Canal Zone, 21-5598
- Goldshore, Sherman at, 8-2054
- Goldsmith, Oliver, comments upon, 15-3822;
22-5895
English author, 7-1745, 1752; 16-4157; 18-4727
4729-30
epitaph on Burke, 16-4160
poems: see Poetry Index
- Gold-thread, a plant, 11-2382
- Golf, for boys and girls, 12-3211
see also Field-golf
- Golf-links, plan of, 12-3211
- Goliath, and David, 24-6284
- Gomez, Juan Vincente, president of Venezuela
18-4604
- Gondola, in Venice, 5-1171
- "Gondoliers," by Sullivan, 13-3293
- Goneril, Shakespearian character, 8-641
- Gong, stopping sound of, 14-3774
- Gonzalo, Shakespearian character, 2-330
- "Good Comrade," by Uhlund, 13-3396
- Good Friday, celebrated as holiday, 17-4470
- Good Gray Poet: see Whitman, Walt
- Good Hope, Cape of, in Africa, 6-1830; 21-5506
- Goodlet, Mr., a schoolteacher, 4-985
- Goods, Colonial trade in, 4-993, 996
- Goodwill, "character in "Pilgrim's Progress,"
8-1127
- Goodwin, Albert, painter, his picture of wrecked
Armada, 4-863
- Goodwin, Rev. Hannibal, and camera-films,
20-5136
- Goodwin Sands, off England, 15-1017
- Goodyear, Charles, and machine for shoes,
11-2717
and rubber, 11-2714; 22-5794
sewing-machine of, 12-3105
- Goodyear Welt Sewing Machine, for shoes,
12-3103
- Goose, and a bear-hunt, 8-1956
- Goose, age of, 9-2350
in race, 18-4612
shadow-picture, 20-5353
sign of, 18-4846
with the golden eggs, 18-3878
- Gooseberries, fruit, 3-649, 660; 13-3325; 16-4136;
18-4760, 4763
- Goosefoot family, of plants, 16-4212
- Goose-girl, princess who became, 11-2944
- Goose-march, a game, 10-2590
- Goose-quills, for pens, 13-3479
- Gopher: see Pocket-gopher
- Gordon, General Charles G., and the Sudan,
18-4306
statue of, by Ford, 16-4182
- Gordon, Charles W., Canadian author, 16-4327
- Gordon, Daniel Miner, principal of Queen's
University, 21-5403
- Gordon, Frances Isabella, posed as cherub,
6-frontis.
- Gordon, Lord George, character in "Barnaby
Rudge," 11-2779
- Gordon, George F., and printing-presses, 14-3614
- Gordon, Lord William, father of Frances,
6-frontis.
- Gordon Arms, in "Guy Mannering," 6-1626
- Gordon College, at Khartoum, 16-4806
- Gorges, Dr. W. C., and Canal Zone, 21-5596
- Gorgon, imaginary monster, 1-217, 218; 4-1051
- "Gorgon's Head," authorship of, 6-1451
- Gorilla, an ape, 3-625-27; 12-3121; 14-3665;
24-6244
teeth of, 12-3272
- Goshawk, a bird of prey, 7-1899-1900; 12-3152
- Gospel of St. John, translated by Bede, 17-4452;
18-4791
- "Gosta Berling's Saga," by Lagerlof, 20-5216
- Gota Canal, in Sweden, 14-3660
- Gotch, T. O., his painting, "The Hair of all the
Ages," 20-frontis.
- Gotham, mauvaise reputation of, 18-4737
wise fools of, 16-4126

GENERAL INDEX

- Gothenborg, Swedish port, 14-3660
 Gothic, in art, 16-4173
 Gothic Arcade, in Mammoth Cave, 3-1308
 Goths, and France, 10-3550
 and Rome, 3-335; 3-1167; 10-2550; 11-2941;
 12-3074; 20-5275, 5282
 at Châlons, 10-2550
 in Iberian Peninsula, 12-3333
 Goujon, Jean, French sculptor, 16-4173
 Goujon, a fish, 10-2709
 Gould, Sir Francis Carruthers, conception of
 John Bull, 3-3353
 Gould, Hannah Flagg, poems: see Poetry Index
 Gounod (Charles F.), composer, 13-3294
 Gourd: see Loofah
 Gourmand, friend of Napoleon, 5-1330
 Gourgas, Dominique de, and Fort Carolina,
 3-276
 Government, and Congress, 3-1390
 kinds of, 3-1433-34
 positions in, 13-3493
 Governor-General: see Canada, governor-general
 Governor's Island, aeroplane landing at, 1-181-82
 Governor's Room: see New York City Hall
 "Governour," by Eliot, 21-5567
 Gower, John, English poet, 13-3040
 Gracchi, The, Roman nobles, 2-439; 10-2668;
 20-5278
 Gracchus, and Cornelia, 10-2668
 Gracchus, Gaius: see Gracchi, The
 Gracchus, Tiberius: see Gracchi, The
 Gracchus, Tiberius Sempronius, 2-439
 "Grace Abounding," written by Bunyan, 7-1746
 Grace Church, in New York, 13-5015-16
 Graces, the, characters in "Faerie Queene,"
 3-702
 Graces, paintings of, 7-1688
 Gracie Mansion, for Home Thrift, 3-2036
 Grackles, birds, 3-2345, 12-3156
 Gradengo, Pietro, a Doge of Venice, 5-1170
 Gradgrind, Louisa, character in "Hard Times,"
 10-2460
 Gradgrind, Thomas, character in "Hard Times,"
 10-2460
 Graf, Mrs., character in "Man Without a Coun-
 try," 21-5617
 Grafting, of trees, 22-5896
 Graham, Mary, character in "Martin Chuzzle-
 wit," 10-2673
 Graham, Sir Robert, and James I, 12-3140
 Grahame, Cornet, character in "Old Mortality,"
 7-1778
 Grahame, Sir Robert, conspirator, 1-257
 Grain, of wood, 3-1359; 6-1520
 Grain, English tax on American, 4-994
 in Bulgaria, 13-3242
 in Canada, 21-5607
 in Morocco, 16-4301
 in Rumania, 13-3240
 in United States, 16-4145
 insects injurious to, 12-3205
 sugar in, 3-704
 winnowing, 22-5923
 Grain, unit of weight, 14-3673
 Grainier process, in salt-making, 1-238
 Grammar, first lesson in, 6-1465
 Gramme, unit of mass, 14-3673
 Gramophone, action of, 12-3145
 invention of, 24-6351
 vulcanite in, 22-5794
 Grampians, mountains in Scotland, 3-795
 Grampus, a whale, 4-1068-69, 1071-72
 Gran, Hungarian town, 21-5652
 Granada, kings of, 13-3348
 Granada, province of, 13-3340
 Granada, siege of, 13-3342
 Granaries, models of, 18-4844, 4848
 Granary Burying Ground, in Boston, 20-5339
 Granby, Marguils of, 14-3768
 Grand Canal, in Venice, 5-1168, 1171, 1173
 Grand Cañon, of the Colorado, picture,
 4-face 851
 Grand Duchies: see Austria, Germany, duchies
 of
 Grande Place, in Brussels, 14-3549
 "Grand Monarch:" see Louis XIV, of France
 Grand Portage, fur-trading post, 13-4833
 Grand Trunk Pacific Railway, construction of,
 3-2374
 see also Canada
 Grand Trunk Railway Bridge, over Niagara
 River, 16-4130
 Grand Trunk Railway Company, in Canada,
 3-2373
 Grand Turk: see Suleiman
 Grand Union Flag, of America, 21-5493
 Granger, Maria, character in "Dombey & Son,"
 10-2587
 Granious, battle of the, 3-1226
 Granite, a rock, 3-433; 20-5250
 in Canada, 21-5548; 22-6044
 production of, 12-3682
 Granny-knot, 12-3643-44
 "Granny's Wonderful Chain," by Browne,
 4-1045; 6-1481; 7-1903; 17-4411
 Grant (James A.), explored African lakes, 3-303
 Grant, Sir Robert, hymns of, 3-2018
 Grant, General Gysseus E., administration of,
 13-3482, 3493
 and West Point, 12-4735
 as president, 3-2377-78, 2382
 during Civil War, 3-2047, 2050, 2053, 2056
 life of, 3-779, 788
 monument to, in Chicago, 22-5828
 tomb of, 12-5014; 21-5428
 Grants, of early colonies, 3-522
 Grapes, in Porto Rico, 3-2156
 where it comes from, 3-649-50; 22-5960
 Grape-hyacinth, a flower, 20-5230
 Grapes, bloom of, 22-5893
 cream of tartar from, 12-3386
 cultivation in winery, 3-655
 fox and the, 3-580
 in Serbia, 12-3242
 sugar in, 3-704
 where grown, 3-650, 655
 wine from, 7-1890
 see also Oregon-grape
 Graphite, for lead-pencil, 15-4024
 in Canada, 22-6094
 price of, 12-4814
 Graphophone, early types of, 21-5602-03
 Grapnels, for cables, 16-4702
 Grappling-irons: see Grapnels
 Grasp, affected by sleep or laughter, 20-5176
 Grass, cereals are, 11-2951
 for Indian messages, 3-2268
 for paper, 4-943
 for sand-binding, 14-3542
 growth of, 15-3894
 importance of, 3-2085
 is a plant, 15-3908
 life of, 1-185
 of the field, 6-1339
 splendor in the, 12-3055
 yellowing of, 20-5292
 see also Blue-eyed grass, Cotton-grass,
 Scurvy-grass
 Grasshopper, and the ant, 3-2179
 various kinds of, 12-3194, 3196-98
 Grass-of-Parnassus, a plant, 16-4136; 19-5088,
 5090
 Grass-pea, a plant, 17-4476, 4480
 Grass-pink: see Calopogon
 Grass-snake, of England, 6-1383-85
 Grass-stain, how to remove, 3-488
 Grass-vetchling: see Grass-pea
 Grate, draught in, 18-4113
 Gratiano, Shakespearian character, 2-332
 Grattan, Henry, and Irish parliament, 21-5557
 Gratus, character in "Ben Hur," 20-5257
 Gravel, beds of, 11-2919
 Grave-mounds: see Barrows
 Graves, Alfred Percival, poems: see Poetry
 Index
 Graves, Collins, saved people from flood, 19-4971
 "Graves of a Household," by Hemans, 22-5939
 Gravitation, and air-pressure, 15-3983
 and atmosphere, 14-3680
 and broken bones, 14-3572
 and cannon-ball, 20-5173
 and gases, 22-5593
 and hills, 12-3513; 18-4817
 and penny, 23-5993
 and planets, 3-2390; 14-3779
 and roots, 15-3906
 and stars, 10-2644; 11-2846; 14-3571
 and sun, 22-5872
 and tree-branches, 15-3907
 cessation of, 6-1591
 effects of, 1-39; 2-317, 322, 426, 428; 3-607, 659,
 693-94; 4-1086; 6-1533, 1591; 12-3226;
 14-3673-74, 3779; 15-3833; 19-5026
 holds people on earth, 14-3568
 holds sea on, 22-5873
 keeps rivers moving, 22-5890
 law of, 3-1964, 1968; 3-2394-97; 14-3587;
 20-5358; 22-5814
 measuring power of, 12-3225
 of floating things, 12-3166; 12-3911

GENERAL INDEX

- Gravitation**, on the moon, 9-2210
 overcome by centrifugal force, 9-2246
 unaffected by temperature, 14-3780
Gravity, centre of, 2-317, 15-3883; 22-5737
 specific, 14-3775; 15-3825-29
 see also Gravitation
Gray, Eliza, and telephone, 2-326; 17-4446
Gray, Menie, in "Surgeon's Daughter," 6-1497
Gray, Captain Robert, voyage of, 6-1397
Gray, Robin, shepherd, 14-3770
Gray, Stephen, English scientist, 9-2163; 17-4442
Gray, Thomas, "Elegy in a Country Church-yard," 8-1114
 poems: see Poetry Index
Gray Brother, and Mowgli, 21-5469
Grease-spot, cleaning a, 17-4494
Great Ark, eggs of, 6-1510
Great Barrier Reef, of Australia, 6-1492
Great Basin, salt in, 1-238
Great Bear, constellation, 10-2639-41; 13-3371
Great Bear Lake, Franklin and, 21-5458
Great Belt, Danish waterway, 14-3658
Great Britain, American colonies of, 16-4074
 and American boundaries, 6-1397; 7-1842
 and Brazil, 20-5370
 and Canadian immigration, 22-5941
 and Florida, 7-1836
 and Northmen, 14-3652
 and Rome, 20-5280
 and Samoa, 8-2156
 and Tibet, 15-3927, 3932
 animals in, 1-157, 160; 2-404-05, 410-12, 513
 army of, 4-1009
 astronomy in, 8-1959
 birth-rate, 7-1656
 cabinet of, 6-1452
 church in, 16-4788
 claimed former subjects, 6-1397-98, 1400
 claims to Oregon, 13-3491
 climate of, 7-1878
 fisheries of, 15-3841
 flag of, 12-3136, 21-5494
 fruits in, 3-649
 helped Portugal, 9-2288
 history of, 1-208, 2-302, 440; 16-4077, 20-5200
 horses in, 23-6062, 6066
 in West Indies, 23-6043
 iron works in, 22-5687
 king's title, 6-1451
 parliament, 6-1451
 plants of, 18-4656-57, 4659
 protects fur-seals, 11-2838
 religious liberty in, 10-2555
 serpents of, 6-1383-86
 tea in, 23-5971-73, 5980
 war with Napoleon, 13-3490
 see also America, Birkenhead, England, India, Scotland, United States, War of 1812, Wellington, etc.
Great Dividing Range, in Australia, 6-1370, 1376
Great Dog, a constellation, 10-2645, 13-3373
Great Eastern, ship, 10-2491, 2493, 2496
"Great Elector": see Frederick William I, elector of Brandenburg
Greater Antilles, West Indian Islands, 23-6041
"Great Expectations", by Dickens, 10-2461
"Great Father of the Waters": see Mississippi River
Great Fire, of London: see London, Great Fire of
Great-grandmother, when a little girl, picture, 1-207
Great Hall, of Westminster: see Westminster Abbey
Great-Heart, character in "Pilgrim's Progress," 6-1186
Greathed, Commissioner, and Meerut, 13-4800
Great Inca, of Peru, 9-2325
Great Lakes, explored, 2-282
 fish of, 10-2701, 15-3843
 geological history of, 1-10, 13-11
 in America, 23-6119
 insects along, 13-3305
 settlements on, 4-893
Great Marquis: see Montrose, James Graham
Great Meadows, battle of, 4-896
"Great Onondio": see Buade, Louis de
Great Pacificator: see Clay, Henry
Great Paul, a bell, 6-1545
Great Plague, an epidemic, 4-1042; 5-1116
Great River: see Mississippi
Great Salt Lake, bathing in, 22-5841
 discovery and settlement of, 7-1839-40
 level of, 12-3126
 Mormons at, 7-1844
 saltness of, 8-2011
Great Serpent: see Chingachgook
Great Slave Lake, in Canada, 6-1917
Great Slave River, in Canada, 6-1917
Great Spirit, of the Indians, 1-18; 5-1109
Great Tom, of Westminster, a clock, 6-1538
Great Turtle: see Unamis
Great War, Africa and, 16-4304
 and Poland, 17-4555
 beginning of, 9-2426; 11-2772; 13-3242, 3247
 camouflage in, 13-3509
 dogs during, 24-6324
 effect on United States, 13-3495
 in Netherlands, 14-3550
 Newfoundland and, 24-6296
 United States enters, 9-2380
 United States navy in, 12-3010
 wireless signals during, 14-3578
 Zeppelins during, 1-174
Great Western, ship, 1-80; 10-2491-92
Grebanne Cape, in Canada, 23-6124
Grebe, a bird, 22-5747
 eggs of, 7-face 1756
 nest of, 7-1762
Greece, and astrology, 8-1961
 and Marathon battle, 7-1819
 animals of, 2-512
 Byron and, 23-6035
 canals of, 13-3248
 costumes of, 13-3245
 empire of, 7-1658; 12-3186, 3192
 flag of, 7-1658
 fruits of, 3-650
 great men of, 5-1320
 history of, 2-298; 4-980; 5-1321, 13-3239, 3247
 13-5114
 legendary history, 1-73; 6-1481
 monuments of, 19-5040
 revolutions of, 13-3247
 sponge-fisheries of, 16-4265, 4267-69
 spread of its culture, 12-3188, 3192
 stories of, 9-2315; 20-5185
 story of, 12-3186, 3192
 wars of, 13-3247
 writing in, 13-3479, 3482, 3484
Greediness, what it is, 23-5992
Greediness, Gulf of, in "Faerie Queene," 3-700
Greek fire, for fighting, 5-1161
Greek Orthodox Church, in Balkans, 12-3194; 13-3245
Greeks, and astronomy, 8-1962
 and Bulgaria, 13-3242, 3247
 and Dr Howe, 1-258
 and football, 24-6277
 and guns, 24-6381, 6383
 and iron, 22-5687
 and Persia, 20-5147-48
 and Rome, 20-5274, 5278
 and stars, 10-2637, 2645
 and war-horses, 23-6060
 cocks of, 24-6357
 glass and, 5-1263
 horses of, 23-6066
 in Canada, 23-5946
 in Egypt, 18-4852
 in Punjab, 7-1774
 in Russia, 14-3723
 leather among, 11-2833
 music of, 5-1087
 pottery of, 17-4539
 sandals of, 12-3106
 sculpture of, 16-4171-72
 taught Venetians, 5-1168
Greek Slave, a statue, 18-4666
Greeley, Lieut. A. W., Arctic explorer, 21-5460
Green, family of, 13-3295
Green, Kitty, and the giant of the peak, 9-2403
Green, in flowers, 16-414
 light-waves make, 1-166
 the color, 8-1951; 10-2696; 17-4524, 21-5633
 why Nature is, 11-2909
Greenaway, Kate, poems: see Poetry Index
Green Bay, Marquette at, 23-6112
Green-blindness, what it is, 17-4525
Greenbottle, a fly, 12-3194; 13-3816
Greene, Albert Gordon, poems: see Poetry Index
Greene, General Nathaniel, during the Revolution, 4-1000-01, 1008
 home of, 7-1837
 portrait by Trumbull, 16-4217
Greene, Mrs. Nathaniel, 7-1837
Greene, Robert, English writer, 21-5488
Greenback, a bird, 9-2112-13
Green-fly: see Aphid
Greenhouse, for plants, 15-3892
 on ship-board, 1-82

GENERAL INDEX

- Greenland, birds of, 7-1833; 22-3753
discovery of, 1-15; 2-371; 14-3854
gems from, 24-8379
ice in, 12-3250
visits to, 21-5456
- Greenland-whale: see Whale
- Green-man orchid, a plant, 17-4479
- Green Mountain Boys, during Revolution, 4-1000; 7-1833
- Green Mountains, name of, 7-1833
- Greensough, Moratio, American sculptor, 18-4665
- 'Greensboro', battle near, 4-1008
in North Carolina, 22-5958, 5961
- Greensleeves, Lady, in story of Grey and White Castles, 7-1904
- Greenwich, royal palace at, 4-859
whitebait at, 10-2805
- Greenwich Observatory, in London, 5-1258, 7-1882; 13-3254
- Greenwich-time, what it is, 12-3047
- Gregory, comment on Athanasius, 15-4029
- Gregory I. St., the Great, and Augustine, 18-4790, 4792
and captive Angles, 2-468; 17-4370; 18-4793
as bishop of Rome, 12-3076
hymn of, 2-2013
- Gregory VII, pope of Rome, called Hildebrand, 10-2554; 12-4794
reign of, 6-1550; 10-2554; 18-4794-95
- Gregory, Charles Noble, poems: see Poetry Index
- Gregory, Prince, character in "Tartarin of Tarascon," 18-4645
- Grenada, ants of, 11-2974
- Grendel, an ogre, 13-3502
- Grenfell, Dr. Wilfred, and Labrador, 24-6296
- Grenoble, Napoleon at, 3-793-94
- Grenonville orgueilleuse, a story, 17-4347
- Grenville, Sir Richard, and colony, 24-6271-72
and the Revenge, 16-4183
character in "Westward Ho!" 14-3714
fought the Armada, 21-5411
- Greta, Swedish doll, 13-face 3434, 3435
- Gretchen, German doll, 13-3434
- Grete, and shawls, 23-6127
- Gretzel, Hansel and, 13-3365
- Greville, Fulke, epitaph of, 2-476
poems: see Poetry Index
- Grey, Albert H. G., Lord, governor of Canada, 5-1281
- Grey, Sir George, governor of New Zealand, 16-4080
- Grey, Lady Jane, and her Swiss friends, 12-2988
a queen of England, 4-859
- Grey, color, 8-1951, 17-4524
- Grey-hen, a bird, 6-1361
- Grey-lag, a goose, 6-1565-66
- Gribble, injures timber, 10-2615
- Gridiron, St. Lawrence and, 22-5850
- Grief, depression caused by, 20-5397
statue of, 18-4673
- Grieg, Edward, Norwegian musician, 13-3294
- Griffin, imaginary monster, 1-217
- Griffin-vulture, a bird, 7-1895
- Grifon, ship, 2-278
- Grill, spinning, picture of, 21-5447
- Grillparzer, Franz, German writer, 13-3396
- Grilse, young salmon, 10-2703
- Grimaldi, palace of, 5-1170
- Grimes, Tom, character in "Water Babies," 15-3831
- Grimm, Jacob L. K., German author, 6-1478; 13-3399
- Grimm, Wilhelm Karl, German author, 6-1478, 13-3399
- Grimshby, Eng., fishing centre, 2-595; 15-3847
- Grimston, Lady Anne, story of, 7-1701
- Grimwig, Mr., character in "Oliver Twist," 10-2566
- Grindelwald, glaciers at, 22-5845-46
town of, 22-5846
- Grindelwald Valley, 22-5843
- Grindstone, in Canada, 21-5548
- Grindstones, production of, 10-2683
- Griothid, road of, 14-3659
- Grip, a raven, 2-2320
bird in "Barnaby Rudge," 11-2779
- Griseida, character in "Antiquary," 7-1668
patience of, 2-493
- Griybeard, King, and the princess, 5-1203
- Grissle: see Cartilage
- Grit, for fowls, 18-4711
- Grisel, ride of, 11-3313
- Grocer, problem concerning loss of, 6-1606
- Groceries, mites in, 13-3364
- Groom, and horse, 7-1889
- Groot, Hugo van: see Grotius
- Groove, of wood-joint, 6-1520-21
- Grosbeaks, birds, 2-3114; 3-2345; 12-3453
- Gross, Max, story of, 12-3222
- Grosseteste, bishop of Lincoln, 12-4797
- Grotius, Dutch scholar, 2-3415; 10-2665
- Ground-air, 4-314
- Ground-beetle, value of, 12-3204
- Ground-ivy, a plant, 17-4555-56
- Ground-nut, a plant, 11-2524; 20-5214, 5219
- Groundsel, a plant, 16-4126, 4204-09
- Groundsel-bushes: see Baccharis
- Ground-squirrel, and owls, 2-2344
see also Chipmunk
- Ground-tackle, of ship, 12-4619
- Ground-thistle: see Plume-thistle
- Grouse, and hemlocks, 21-5432
egg of, 7-face 1756
nest of, 7-1762
ruffed, 6-1569, 1581-82
various, 6-1558-59, 1561-62; 9-2342; 12-3151
- Growth, when hungry, 12-4693
- Growth, gradual, 22-5723
stoppage of, 10-2470
what it is, 12-4813
- Grubs: see Bee, Insects, Larvae
- Gruft and Tackleton, firm in "Cricket on the Hearth," 2-2302
- Gryphon, character in "Alice in Wonderland," 12-3157
- Guadalquivir River, in Iberian Peninsula, 12-3338, 3347
- Guadeloupe, island of, 23-6048
- Guadiana River, in Iberian Peninsula, 12-3327
- Guam, island of, American, 2-2147, 2156; 11-2771
- Guanaes, gnawing animals, 22-6001
- Guanaquito, Mexican town, 17-4403
- Guano, and Peru, 12-4608
- Guarani, Indian tribes, 17-4512; 18-4610
- Guardian of the Shore, English, 2-465
- Guardians, Camp-fire: see Camp-Fire Girls
- Guard, National, of France, 2-2282; 16-4102
- Guards, puzzle, 19-5031; solution, 19-5133
- Guards: see Football
- Guatemala, history of, 17-4400, 4406
national bird of, 7-1764
scene in, 17-4405
- Guavas, where grown, 3-650-51
- Guayaquil, port of Ecuador, 12-4606, 4606
- Gudgeon, bait-fish, 10-2705-06
- Guelderland, in the Netherlands, 14-3542
- Guelder-rose, a plant, 15-4016; 17-4355; 18-4680
- Guelphs, citizens of Florence, 11-2787; 12-3080
- Guericke, Otto von, German scientist, 2-2161-62, 2169
- Guerrero, Vicente, Mexican leader, 17-4401
- Guerriere, ship, 6-1398; 12-3007
- Guest, guests at the feast, 21-5566
of the king, 22-5681
- Guiana, gold of, 20-5313
see also French Guiana, etc.
- Guidi, Tommaso: see Masaccio
- Guido Reni, Italian artist, 17-4593
- Guidhall, of London, 8-1354
- Guides, of Middle Ages, 11-2787
- Guilford Court House, battle of, 4-1008
- Guillemot, bird, 7-1644-46
egg of, 7-face 1756
- Guillotins, during French Revolution, 2-2283-84; 16-4104, 4106; 21-5538
- Guilt, and Congress, 6-1435
- Guinea Coast, of Africa, 16-4208
- Guinea-fowls, origin of, 6-1558, 1563-64
- Guinea-pigs, as pets, 2-514-15; 17-4500
characters in "Alice in Wonderland," 12-3164
hair of, 9-3335
- Gulabawa, Queen, character in "Table Round," 4-332-33; 9-1199; 9-1938; 12-3371
- Guise, Duke of, and Condé, 14-3695
- Gull, a bird, 7-1640-44
egg of, 7-face 1756
seed on spring-fish, 10-2482
- Gullet, of the throat, 2-2174; 9-2163; 24-6307
- "Gulliver's Travels," by Swift, 5-1333, 1337; 7-1748
- Gum, elastic: see Rubber
- kauri, 6-1488
- Gumbo, character in "The Virginians," 12-3420
- Gummiage, Mrs., character in "David Copperfield," 11-2864
- Gum-trees: see Eucalyptus, Sweet-gum
- Gunduli, the Weeper, a monk, 6-1254
- Gunn, Ben, in "Treasure Island," 14-3634

GENERAL INDEX

- Gunpowder**, action of, 8-2241
and Elizabeth Lane, 11-2814
candle in barrel of, 4-1065
first used, 3-769, 772
inventor of, 5-1164
making of, 5-1168; 9-2244
- Gunpowder Plot**, 4-1036
see also Pawkes, Guy
- Guns**, anti-aircraft, 1-174, 179
breech-loading, 11-2712
drawn by dogs, 24-6324
early use of, 5-1164
construction of big, 23-6147
flint-lock, 15-3931
kick of, 18-4812
Krupp, 23-6158
noise of, 9-2243-44
on a battleship, 23-6205, 6212
power of, 23-6146
seeing flash of, 3-818
Skoda, 23-6159
steel used for, 22-5690
wooden, 8-2048
see also Machine-guns
- Gunsale**, of a ship, 18-4618
- Gurdun, Bertrand de**, killed Richard I, 8-2019
- Gurgle**, causes of, 14-3774
- Gurth**, swineherd in "Ivanhoe," 7-1663
- Gustavus Adolphus**, king of Sweden, and America, 2-529
and Germany, 10-2558
and his troops, 14-3653, 3660
and Russia, 14-3724
- Gustavus Vasa**, king of Sweden, and drinking party, 14-3653, 3656, 3660
founded Helsingfors, 15-3805
- Gutenberg, John**, German printer, 14-3607, 3611
- Guthrie, Dr.**, influenced by picture, 15-3824
- Gutta-serena**, in ocean cables, 18-4698-99
- "Guy Mannering"**, by Scott, 6-1497, 1626
- Guy of Lusignan**, 6-1653
- Guy of Warwick**, 8-1356
- Guyon**, Sir, character in "Faerie Queene," 3-697, 698-701
- Gusman, Don**, character in "Westward Ho!" 14-3715
- Gwynn, Nell**, costume for, 20-5846
- "Gyges and his Ring"**, by Hebbel, 13-3399
- Gymkhana**, a Christmas, 9-2264
- Gymnasium**, Spartan, 20-5201
- Gypsum**, forms in Mammoth Cave, 5-1306
in Alaska, 15-4058
in Canada, 21-5544; 23-6094
what it is, 7-1816
- Gyro-car**, description, 1-98
- Gyroscope**, working of, 1-97; 23-6216
- H**
- "H. M. S. Pinafore"**, by Sullivan, 13-3293
- Hakon**, king of Norway, 14-3656
see also Hakon
- Hakon VII Platen**, in antarctic, 21-5466
- Haarlem**, town in Holland, 14-3540, 3542, 3544
- Habitants**, of Quebec, 1-224; 3-558; 20-5299, 5301
- Habitants loading logs in winter**, by Horatio Walker, 20-5298
- Habitat**, meaning of, 13-3390
of plants, 15-4014
- Habits**, breaking, 20-5291
- Hackberry**, a tree, 21-5438
- Hackney-coaches**, or cabs, 23-6051
- Haddock**, a fish, 10-2602-04; 15-3817; 3954
- Hades**, abode of the dead, 20-5186
- Hadleigh, Vicar of**, martyrdom of, 19-5094
- Hadrian**, emperor of Rome, 2-540
- Haedo**, tale of Geronimo, 23-6023
- Hemoglobin**, and bile, 6-2366
complicated compound, 7-1683
of the blood, 6-1430
- Hemorrhage**, in bruise, 17-4383
treatment of, 18-4616
- Hagenbeck, Carl**, and African animals, 23-5999, 6001
- Hag-fishes**, development of, 14-3666
- Hague**, capital of Holland, 14-3540, 3547-48
Palace of Peace at, 24-6298
- Haidée**, character in "Count of Monte Cristo," 17-4433
- Hail**, what is, 6-2081
- "Hail, Columbia"**, by Hopkinson, 12-3052
- Hainault**, lords of, 13-3443
- Hair**, combing on Hallowe'en, 22-5923
cutting, painless, 16-4117
- Hair**, does not hurt, 15-3910
girl who sold, 16-4027
glands of the, 8-1923
greying, 10-2469
growth of, 8-1981; 15-3910
in nostrils, 7-1648; 24-6322
of Pe-Le, 20-5232
protects neck and brain, 10-2468
removing, 11-2836
rises with fright, 16-4275
use of, 1-166, 2-296, 408
- Hair-cells**, of ear, 15-3912, 3917, 3997
- Hair-grass**, tufted, 12-3082
- Hairpin-work**, how to do, 17-4496
- Hair-receiver**, making a, 17-4387
- Hairs**, giant with three golden, 4-1077
of a cactus, 15-4012
of caterpillars, 12-3017-18, 13-3454
of flowers, 15-3816
of stinging-nettle, 17-4356
stinging, 3-816
- Hair-streak**, a butterfly, 12-3020
- Haiti**, and rubber-balls, 14-3569
island of, 23-6041, 6044
see also Hayti
- Haitian Republic**, in West Indies, 22-6045
- Hake**, a fish, 10-2602-03
- Hakluyt, Richard**, English writer, 21-5486-87
- Hakon**, king of Norway and Scotland, 12-3136
- Hal, Prince** see Henry V, king of England
- Hale**, Rev. Edward B., American author, 21-5615
- Hale, Nathan**, American spy, 15-3919-21
statue of, 15-3921; 18-4674
- Halévy, Ludovic**, wrote "L'Abbé Constantin," 18-4751
- Half-Acre**, Hell's, 3-584
- Half-back**: see Football
- Half-breeds**, Canadian, 8-1278
- Half-King**, Indian chief, 4-896
- Half-Moon**, ship, 2-277, 281; 18-4864
- Halibut**, a fish, 10-2601, 2605-06; 15-3954, 4060
- Halicarnassus**, Greek state, 20-5152, 5307
- Halifax, Edwin**, character in "John Halifax, Gentleman," 15-3974
- Halifax, Guy**, character in "John Halifax," 15-3970, 3973
- Halifax, John**, character in "John Halifax," 15-3970
- Halifax, Lord**, sold Montague House, 5-1258
- Halifax, Maud**, character in "John Halifax," 15-3973
- Halifax, Mariel**, character in "John Halifax," 15-3973, 3974
- Halifax, Walter**, character in "John Halifax," 15-3975
- Halifax**, Canadian port, 1-223; 5-1260; 15-3958; 21-5513-45
see also Canada, railways and canals
- Hall, Charles F.**, arctic explorer, 21-5458
- Hall, G. H.**, developed breech-loaders, 11-2712
- Hall, Gertrude**, poems: see Poetry Index
- Hall, voices in empty**, 7-1655
- Hallam, Arthur Henry**, death of, 23-6037
- Halley, Edmund**, English astronomer, 7-1675, 1682; 10-2543
- Hall of Records**, in New York, 19-5010
- Hallowe'en**, things to do on, 22-5923
- Hall-porter**, of Jack's house: see Jack, house of
- Hall-Tower**: see Tower of London
- Halo**, around moon, 22-5812
- Halogens**, what they are, 5-1315
- Hals, Frans**, Dutch painter, 17-4591, 4595
pictures of, 14-3541
- Ham**, meaning of, 2-465
- Hamam-tree**, bark of, 23-6164
- Hamal**, a star, 10-2643
- Haman**, story of, 24-6323
- Hamburg**, as free town, 10-2561, 2566
bridge at, 1-34
German seaport, 10-2554; 11-2760, 2764, 2766
"Hamburg Dramaturgy," by Lessing, 13-3394
- Hamelin, legend of**, 3-370
- Hamerton, E. G.**, poems: see Poetry Index
- Hamidieh Mosque**, in Constantinople, 12-3243
- Hamlicar**, Carthaginian general, 20-5276
- Hamilton, Alexander**, aided Martha Washington, 2-399
and Elizabeth Patterson, 19-4945
and Jefferson, 8-762
as Secretary of the Treasury, 2-398; 6-1288, 1293-94, 1396; 10-3439
buried at Trinity, 19-5014
death of, 6-1367
delegate to convention, 6-1291

GENERAL INDEX

- Hamilton, Alexander**, death of, 10-2444; 10-2916
 life of, 10-2444
 portrait of, 10-2443; 10-2444
 statue of, 10-2444
- Hamilton, Burr**, character in "Henry
 Raymond," 10-2443
- Hamilton, Patrick**, martyrdom of, 10-5096
- Hamilton, Canadian city**, 1-226; 5-1371
- Hamilton, in Bermuda**, 23-6043
- Hamilton, George**, home of Hamilton, 10-2444
- "Hamlet," by Shakespeare**, 21-5523-29
- Hamlet, prince of Denmark**, Shakespearean
 character, 2-449
 tomb of, 14-2660
- Hammer, automatic**, 17-4459
- horns of the east**, 10-2912, 2916
- how to use**, 2-284
- of clock-bell**, 6-1523, 1545
- of musical instruments**, 5 1087, 1089, 1092
 of Thor, 1-94; 14-2662
- power of**, 3-312
- Hammerfest**, Miss Brigham at, 3-2036
- most northern town**, 14-2661
- Hammer-head**, a shark, 10-2476, 2478
- Hammerhead**, Queen of Stumpinghamie 15-4049
- Hammerhead, Thomas**; see A Kempia Thomas
- Hammerkop**, a bird 3-1976-77
- Hammer of the Scots**; see Edward I
- Hammerly, Captain**, character in "Charles
 O'Malley," 12-2976
- Hammock**, for sleeping in, 23-6214
- making a**, 23-6164
- Hammurabi**, king of Babylonia, 19-4962, 4970
 stele of, 19-4963
- Hampton, John**, Eng. patriot, 4-1038, 7-1964, 1866
- Hamper**, doll's, 3-2137 9-2269
- Hampton Court**, palace of, 4-858-59 5 1258
- Hampton Institute**, a negro school 11 2942
- Hanahan**, of the mill 12-3000
- Hancock, General**, and West Point 18-4735
- Hancock, John**, American patriot, 4-999, 1003
- Hancock, Thomas**, and rubber, 22-5794
- Handel, George F.**, musician 13 2385-88
- Hankrochier**, a linen 9 2330
- and the coin**, 15-4047
- cases for**, 5-1250
- for afternoon tea cloth**, 21-5445
- name on**, 23-6006
- wizard's**, 10-2521
- Handles**, of knives and forks, 18 4805
- Hand-mill**, of Austria 21-5655
- Hand-pump**, for fires 22-5756-57, 5761
- Hands**, after playing with snow, 7-1655
- alphabet formed by**, 20-5251
- and moving figures**, 24-6282
- bones of**, 10-2673 16-4200
- creases of**, 3-1984
- difference between**, 19-5022
- drawing with both**, 3 1950
- feeling in injured**, 18 4816
- fracture of**, 16-4289
- injuries to**, 19-4929
- lines on**, 6-1765
- of a clock**, 6-1539 1545
- of St. Stephen**, 21-5664
- use of hands**, 2-2009 15-3817
- Handspike**, hitch, 13-3326
- Hannah**, and Samuel 24-6128
- character in "Little Women"**, 20-5170
- "Hannah Binding Shoes," by Lacombe**, 12-3102
- Hannibal**, Carthaginian general 20-5275-76
 crossed the Alps, 12-2989 24-6259
- Hannibal Mc.**, and Mark Twain 23-6072
- Hannington (James)**, bishop of Africa 16-4305
- Hanover, Elector of**, became George I, of Eng-
 land, 10-2560
- Hanover, arms of**, 7-1657
- Hanover, house of**, 5-1113
- Hanover, W. M.**, college at, 17-4568
- district of**, 10-2596
- Hans**, and rosy apple, 21-5479
- in "King of the Golden River"**, 6-1439, 1527
- "Hans Brinker, or the Silver Skates," by Dodge**,
 6-2599
- Hansville League**, of towns, 10-2554, 14-2542
 2654, 2662, 2722
- towns of**, 11-2764, 2772
- Hansel**, and Gretel, 5-1478; 19-336
- Hanson, Joseph A.**, designed cab, 23-6053
- Hanson-cab**, 23-6053, 6055
- Hapsburgs**, Austrian House of, 10-2553, 2555
 14-2544; 21-5552
- give up title of Holy Roman Emperor**, 10-2561
 in Italy, 12-3082
- Harp**, first stringed instrument, 5-1087
 of Ireland 7-1657
 that talked 12-2909
- Harpers**, songs of, 15-2926
- Harpers Ferry**, raid on 2-2044 12-2442
- Harpies**, imaginary monsters 1-218
- "Harp of the Wind," see "View of the Seine"**
- Harpoon-head**, buried in mud, 11-2917
- Harpoons**, of cave-men, 1-206
- Harpischor**, musical instrument 5-1088-89
- "Harp that once thro' Tara's Halls," song**, 14-2770
- Harrisers**, falcons 7 1900
- Harrison, Alice**, poems see Poetry Index
- Harris, Joel C.**, American author, 6 1423 1621,
 23-5958
- stories of**, 4-966
- Harris, Timothy**, pins made by, 19-5802
- Harrison, Benjamin**, administration of, 12-2483,
 3194
 as president, 9-2278, 2382
 Columbus Day Proclamation, 17-4464
- Harrison, James**, manufactured clock, 6-1540
- Harrison, William Henry**, administration of,
 12-2488-91
 and Tecumseh, 7-1871
 as president, 7 1840
 born in Virginia, 9-2382
 came from Ohio 9 2382
 during War of 1812, 3-759 6 1398
 grandson of, 9 2376
- Harrow**, use of 15-2949
- Harry**, character in "Abbe Constantine" 18-4754
- Hart, Emma C.**; see Willard Emma C
- Hart, William**, and Martin 10-4248
- Harte, Francis Bret**, American author 6-1600 1620
 poems, see Poetry Index
- Hartford, Conn.**, founded 2-532
 New England convention at, 6-1399
- Hart Hall**; see Heorot
- Hartshover, Sir John**, character in "Water
 Babies," 15-2331
- Harus al Raschid**; see Haroun Alraschid
- Harvard, John**, lugary to college, 2-528; 23-6034,
 4568
 statue of, 15-4670
- Harvard College**, founding of 2-526
 history of, 17-4566-67
 printing in, 14-2612

GENERAL INDEX

- Harvard College**, punishment in, 4-962
Harvest, of ants, 11-2972
 of wheat, 8-1136
 preparing for, 16-4145
Harvest-cider, habits of, 12-3359
Harvest-bug, injurious insect, 12-3203
Harvey, William, discovered circulation of the blood, 6-1464, 1593; 8-2332; 12-4625, 4631; 23-6108
Hastibal, Carthaginian general, 13-3342
Hassam, Childs, American artist, 16-4252
 picture of, 16-4257
Hassam, Sultan, tomb of, 16-4302
Hastings, Warren, impeachment of, 7-1720; 16-4158
Hastings, battle of, 1-127; 2-465, 473; 8-2068
Hastings Street, in Vancouver, 21-5613
Hat, and the scalp, 8-2082
 beaver, 19-5076
 height of, 22-5741
 made in American colonies, 4-994
 made of paper, 8-1941
 Murdock's wooden, 3-665
 of darkness, 4-1052
 Quakers and, 2-529
Hatcher, Julia, and a bull, 12-4663
Hatcheries, for fish, 12-3957
Hate-light, Mr., character in "Pilgrim's Progress," 8-1183
Hathaway, Anne, cottage of, 21-5581
 married Shakespeare, 21-5580
Hathrell, Sir John, his picture of Bailliff's Daughter, 21-5499
Hathor, temple of goddess, 12-4851
Hathapsu, queen of Egypt, 12-4849
Hatter, character in "Alice in Wonderland," 12-3091, 3156, 3163
Hatteraick, Dirk, character in "Guy Manner-ing," 6-1626
Hatteras Inlet, capture of, 8-2047
Hatteras, see Sphenodon
Hatto, Bishop, of the Mouse-Tower, 11-2765
Hatty M., dory, 20-5375
Hawkitt, Godfrey, and matches, 9-2428
Hawthorne, birthplace of Flora Pattison, 2-333
Haw, Valentine, invented reading for the blind, 8-1994
Havana, Cuban city, 17-4514; 23-6046, 6049
 yellow fever and, 12-3235
Havana Harbor, Maine destroyed in, 8-2154
Havel, river in Europe, 11-2762-64
Havelock (Sir Henry), relieved Lucknow, 8-1119; 7-1720
Haven, Mother Carey's, in "Water Babies," 12-3338
Haverall, Frances Midley, hymns of, 8-2016-17
Haverhill, attacked, 4-895
 shoe-factories at, 12-3103
Havisham, Miss, character in "Great Expectations," 10-2462
Havre, Belgian government in, 14-3550
 French seaport, 9-2418, 2420, 2423
 Town Hall of, 9-2291
Hawaii, and cadets, 12-4736
 Christianity in, 20-5283
 fruit from, 2-650
 islands of, 6-1484; 8-2147-48; 12-3494
 natives of, 6-1491
 school republic in, 24-6390
 size of, 8-2382
 sugar in, 3-704; 9-2386
 Washington's birthday in, 17-4466
 see also Molokai
Hawes, Mary Virginia, American writer, 8-2098
Hawes Inn, in "Antiquary," 7-1667
Hawthorn, egg of, 7-face 1760
Hawk, egg of, 7-face 1756
Hawke, Admiral (Edward), at Quiberon, 5-1114
Hawke, Lord, 14-3768
Hawkes Bay, Province of New Zealand, 6-1488
Hawkesbury River, bridge over, 1-33
Hawk-eye, see Bumpo, Nathaniel
Hawkins, Jim, in "Treasure Island," 14-3630
Hawkins (John), English sailor, 4-862
Hawkins, Captain John, character in "Westward Ho!" 14-3716
Hawkins, Sir John, English adventurer, 17-4512; 23-6042
Hawk-moth, an insect, 12-3011, 3014-15, 3019
Hawk-owl, a bird, 7-1901-02; 12-3154
Hawks, distribute seeds, 9-2214
 dash-eating birds, 3-805, 807; 7-1900, 9-2342; 12-3152
Hawks, hunt herons, 8-1974
Hawthorne, Francis, English scientist, 8-2162
Hawthorne, Mrs., poems: see Poetry Index
Hawthorne, flowers of, 12-4016; 12-4266, 4269
Hawthorn, a shrub, 14-3533; 20-5352
 crown on, 4-855
Hawthorne, Charles W., American painter, 16-4258
Hawthorne, Nathaniel, American author, 6-1480, 1613; 8-2099
Hawthorne, home of the, 8-2099
Hay, John, poems: see Poetry Index
Hay, and codlin-moth, 12-3204
 color of, 20-5292
 fragrance of, 8-1340
 harvest of, 11-2714; 16-4152
 in Norway, 14-3657
 made by marmots, 3-682; 24-6375
 making, 15-3951
 production of, in United States, 9-2384
Haydn (Joseph), musician, 12-3284, 3287-88, 3291
Hayes, Dr. Isaac L., arctic explorer, 21-5458
Hayes, Rutherford B., administration of, 13-3488, 3493
 an president, 9-2377, 2382
Hay-fever, cause of, 8-1340
Hay-field, games to play in, 16-4203
Hayne, Robert Y., speech of, 10-2442
Hayston, of Bucklaw, in "Bride of Lammer-moor," 6-1497
Hayti, island of, 1-64; 22-5793
 see also Haiti
Hazards, in golf-links, 12-3211
Hazel-nuts, kinds of, 8-1997, 2001
Hazlewood, Charles, character in "Guy Manner-ing," 6-1627
Hazlitt, William, English writer, 12-4723, 4731-32
Head, arteries of, 16-4201; 19-4928
 bones of the, 16-4200
 imp with disappearing, 13-3432
 mending doll's, 16-4294
 of a com't, 10-2541
 of an an'hor, 12-4619
 of the body, 10-2569; 21-5622
 see also Skull
Headache, cause of, 1-167; 22-5725
 in crowded room, 16-4274
Head-hunting, in Philippines, 8-2152
Heady, Mr., character in "Pilgrim's Progress," 8-1183
Healing-power, how it works, 6-1160
Health, and eating, 8-2363
 and will-power of others, 20-5178
 in country, 11-2908
 of United States, 11-2801
Heardred, reign of, 13-3503
Hearing, by night and by day, 10-2536
 centre of, 15-3914
 marvel of, 15-3913
 of fish, 7-1885
 of the blind, 15-3910
 process of, 15-3997
 sense of, 14-3692
 with eyes closed, 18-4692
 without air, 15-4021
Hearse, called shillibeer, 23-6053
Heart, and circulation of the blood, 23-6108
 and fear, 23-5993
 and pulse, 17-4378
 beating of, 5-1162; 6-1464, 1590, 19-5020
 living pump, 6-1593; 16-4200-01; 21-5622; 23-6107
 music of the willing, 20-5380
 nerves that control, 14-3599
 of Bruce, 12-3138
 position of, 7-1648
"Heart of Midlothian", by Scott, 6-1497, 7-1773, 9-2236; 12-3131
Heart of the Andes, picture, by Church, 12-4249
Hearts, King and Queen of, characters in "Alice in Wonderland," 12-3156
 Knave of, 12-3163
Heartsease, a plant, 12-4660
 see also Pansy
"Hearts of Oak", by Garrick, 14-3766
"Heart that Knows", by Roberts, 16-4327
Heat, and bending, 22-5891
 and calories, 23-5996
 and dissolving, 21-5640
 and friction, 16-2640
 and motion, 12-3426; 16-4084
 and temperature, 14-3680; 17-4501
 and thermos flask, 21-5687
 and weight, 14-3780

GENERAL INDEX

- Heat, and winds, 22-5996**
 color of heated things, 7-1878; 14-3885
 convection and conduction of, 4-1085, 5-1317
 cracks wood, 17-4485
 curls paper, 18-4024
 depends on oxygen, 8-571
 different kinds of, 16-4229
 effects of, 14-3775; 15-3910, 22-5723
 escaping, 13-3384
 found in tunnels, 24-6260, 6267
 lack of, on mountain, 8-812
 makes chemical compounds, 7-1695, 1697
 of body, 3-692, 16-4110
 of boiling water, 13-3391
 of climates, 18-3045
 of fire, 14-3775
 of hot-water bottle, 13-3506
 of kettle, 14-3572
 of plants, 12-3148
 of rubbed pin, 12-3148
 produced by radium, 5-1319, 6-1416, 10-2654, 12-3036, 3045
 produced in body, 10-2648, 11-2727
 radiant, 16-4310, 20-5163, 5244
 radiation of, 3-734
 sensation of, 13-3391
 traveling of, 7-1790, 16-4309
 waves of, 6-1449
 what it is, 4-1085
 works for us, 17-4389
Heath, John M., reaping machine of, 11-2714
Heath, Sir Robert, and Carolinas, 2-531
 "Heathen Chinese," by Harte, 6-1620
Heather, a plant, 16-4136
Heather-bell: see Bluebells of Scotland, Harebell
Heath-family, of plants, 16-4136, 17-4557
Heaths, various, 16-4136, 18-4659
Heat-level, and thermometer, 17-4392-94, 4501
 see also Temperature
Heaven, temple of, 12-3025
Heavens, City of the, 7-1677
Hebbel, Friedrich G., German writer, 13-3399
Hebe, goddess, married Hercules, 13-3374
Heber, Bishop Meginald, hymns of, 8-2015, 2017
Heber, Louis, Canadian sculptor, 5-1279, 6-1458, 16-4327, 20-5296, 21-5613
Hebrews, in Canaan, 12-4960
 music of, 5-1087
 story of, 24-6323
 see also Israelites
Hebrides, gems from, 24-6382
 history of, 2-472
Hecla, Mount, volcano, 8-2084, 14-3658
Heliograph, for copying, 18-4819
 how to make, 8-1302
Hector, Greek hero, 1-73
Hector, Sir, character, in "Table Round," 4-881
Hebe, wife of Priam, 1-73
Hedge-garlic, a plant, 15-4016, 17-1176, 4479
Hedgehog, as a pet, 8-514-15
 home of, 21-5573
 in "Alice in Wonderland," 12-3158
 sleep of, 24-6373, 6375
Hedgeley Moor, battle of, 3-777
Hedge-sparrow, a bird, 8-2111
 egg of, 7-face 1760
Media, Sven, Swedish explorer, 12-3128, 15-3928, 16-4118, 4121
Heels, of feet, 10-2571, 2574
Heep, Uriah, character in "David Copperfield," 9-2320, 11-2365
Hegira, or Flight of Mohammed, 18-3858
Height, and giddiness, 13-3513-14
 falling from, 14-3674
 measuring, 3-812, 8-1943
 morning and night, 10-2471
Height of Land, in Canada, 1-230
Heilmann, Andrew, and Gutenberg, 14-3609
Heilmann, Anton, and Gutenberg, 14-3609
Heilmann, Father, and Undine, 15-4053
Heine, Amalie, and Heine, 13-3398
Heine, Heinrich, German writer, 13-3397, 20-5307, 24-6388
 poems see Poetry Index
Heir, and the will, 20-5184
Heir of all the Ages, 20-frontis
 "Heir of Medogato," by Yonge, 10-2627
Helios, flight of, 1-177
Helios, of Troy, 1-73, 78, 7-1710
Helios, St., marriage of, 20-5333
Helios, Shakespearian character, 2-327, 328
Heligoland, island of, 11-2764
Heliograph, signals with, 17-4441, 4446
Heliopolis, in Egypt, 18-5029
Hellas, the sun, 2-3249
Heliostereol: see Bloodstone
Hellum, element, 8-647; 9-1519; 9-1447
 liquefied, 16-4684
Hell's doggerel, a quat, 22-6375
Hellas, 22-5308
 see also Greece
Hellebore, black, 17-4348
 false, 12-3068
 stinking, a plant, 17-4553
Helleborine, an orchid, 17-4474, 4479
Hellenes, people of Greece, 22-5203
Hellespont, crossing the, 20-5156, 5158-54
 see also Dardanelles
Hell Gate, blowing up, 22-5754
Hell Gate Railway Bridge, 1-23
Hell's Hole, in St. Lawrence, 22-6123
Hellaland, naming of, 2-271
Helm, of a ship, 12-4618
Helmst, for fire-fighting, 22-5767
 of diver, 24-6311, 6314
 of Northmen, 2-271
Helmholtz (Hermann L.), and resonators, 19-5059
Meloderma, poisonous lizard, 5-1211
Melrose, and Abeldar, 18-4034
Meltingform, capital of Finland, 12-3805
Melvetians, natives of Switzerland, 12-2984
Melvetic Republic, 12-2991
Memo, how to, 2-459
Memann, Captain, married Felicia, 22-5938
Memann, Felicia D., children's poet, 14-2696; 22-5938
 poems: see Poetry Index
Memlock, a tree, 14-3734, 21-5430, 5436
 bark eaten, 20-5345
Memlock, poisonous plant, 5-1325, 1328; 16-4128; 19-4956
Hemp, a fibre-plant, 15-4003; 17-4356
 for paper, 4-343
 in Egypt, 16-4308
 in ocean cables, 18-4698
 in West Indies, 22-6045
 see also Manila-hemp, Sisal-hemp, etc.
Hemp-agrimony, a plant, 12-4953, 4956
Hemstitching, drawn-thread, 9-2357
Men, age of, 9-2350
 and chickens, 17-4587
 and the fox, 15-4056
 as mother, 9-2345
 cackling of, 23-6216
 does not crow, 16-4113
 eggs of, 7-1885
 or egg, priority of, 22-5892
 with the golden eggs, 12-3208
Menbane, a poisonous plant, 17-4472-73
Menderson, Colonel Richard, and Boone, 24-6252-53
 "We Never Smiled Again," by Hemans, 22-5939
Men-hawks: see Hawks, Canadian
Mennebont: siege of, 10-2508
Henri, Robert, American painter, 16-4252
Henrietta Maria, Maryland named for, 2-528
 queen of England, 4-1036, 7-1857, 8-2079
Henriette, the French doll, 13-3434
Henrique, prince of Portugal, and Tangier, 15-4027
Henry, St., converted Finland, 14-3726
Henry, Prince, of Brunswick, and Countess Catharina, 20-5239
Henry, prince of England, and Raleigh, 21-5412
Henry I, king of England, and Becket, 12-4796
 and Anselm, 12-4798
 and Ireland, 21-5554
 and Prince William, 10-2507
 and Scotland, 12-3136
 and Tower, 5-1254
 reign of, 3-590, 6-1551
 wife of, 12-3133
Henry III, king of England, and Alexander II; 12-3136
 and Westminster, 12-4652
 incidents of reign, 3-589, 595, 769, 4-332; 5-1253
Henry IV, king of England, and James I, 12-3138
 reign of, 3-768, 774
 "Henry IV" a play, by Shakespeare, 21-5584
Henry V, king of England, and a judge, 12-4662
 reign of, 1-130, 3-774-75, 8-2073
 "Henry V" a play, by Shakespeare, 21-5586
Henry VI, king of England, and Westminster, 5-1253
 coronation of, 21-5535
 reign of, 3-774, 775-77

GENERAL INDEX

- "Henry VI," play, by Shakespeare, 21-5448
Henry VII, king of England, and America, 2-272
 and Ireland, 21-5557
 and Westminster, 2-1253
 chapel of, 4-855, 2-1252
 daughter Margaret, 12-2140
 physician of, 12-4630
 reign of, 2-776, 4-855-58, 860
Henry VIII, king of England, and Francis I, 21-5535
 and Ireland, 21-5556
 and James of Scotland, 12-3140
 and Roman Catholics, 12-5093
 and Rome, 12-3082
 and rose of England, 22-5818
 and Sir Thomas More, 2-1330, 12-3942
 dismissal of Wolsey, 21-5531
 letters of, 12-3800
Henry II, king of France, and Calais 2-2072
Henry IV, king of France and Champlain, 2-557
 and Huguenots, 2-2074
 and the Louvre, 21-5535
 and New World 2-555
 comment on James I, 7-1857
 mother of, 2-334
Henry, king of Germany, character in "Lohengrin" 21-5561
Henry IV, Holy Roman Emperor and Pope Gregory VII, 12-3554 12-3076, 12-4795-98
Henry of Navarre, king of France, see Henry IV, king of France
Henry the Navigator, prince of Portugal 12-3340, 12-4298
Henry, Joseph, and electricity 2-2170 17-4445
Henry, O., American author 2-1621
Henry, Patrick, American patriot 2-67, 6-1392, 12-195
 statue of, 12-4666
Henry, Thomas M., his picture of the Birkenhead, 7-1818
 "Henry Diamond," by Thackeray, 12-3310
Henson, Peary's servant 21-5462
Hesiod, home of Hrothgar, 12-4502
Hesperia, a flower, 11-879, 2281
Hesperwhite, George, cabinet-maker, 23-6174
Hera, Greek goddess, 1-207 2-315
Heraclitus, Greek philosopher, 2-1320
Heraclius, emperor of the East, 12-1188 12-1860, 12-4302
Herald Office, in New York 12-1012
Heracl, Asiatic town, 12-3926
Hesbert, George, hymns of, 2-2015, 2018
 poems see Poetry Index
Heserobert, a plant, 12-2066, 12-1137 17-4352, 4554
Hesbe, cultivation of 12-3217
Heronianum, a buried city, 20-5282 22-6221
 figures found at 21-frontis
 paintings in, 17-4589
Hercules, a constellation, 10-2641 2613
Hercules, and the divine milk, 12-4785
 and the poplar 12-4866, 22-5775
 labors of, 20-5186
 legends of, 12-3374
 statue of, 20-5185
 Twelve Labors of, 12-3374 20-5185
 see also Pillars of Hercules
Herder, Johann G. von, German writer 12-3194 2397
Heredity, law of, 2-2007 12-3143
Hersford, Bishop of, and Robin Hood 12-2681
Hersford Cathedral, in England, 14-3607
 chained books of, 12-3935
Hersward, the Wake, British patriot, 1-127
Hermann, German hero, 10-2550-51
Hermann, sculpture, of battle, 11-2769
 "Hermann's Battle," by Kleist, 12-3396
Herman, by Praxiteles, 12-4172
Hermia, Shakespearean heroine, 2-327
Hermione, Shakespearean character, 2-562
Hermis, Peter of Morone, the, 2-501
Hermis, a hummingbird, 7-1756
Hermione, enchanted, in "Faerie Queene," 2-493
 home of Jackson, 2-785
 in Petrograd, 12-3800
Hermat, a crustacean, 2-1420, 1428
 partnerships of, 2-2407, 2409-10
Hermis, a bird, 12-5463
Hermis, in "Canterbury Tales," 2-495
Hermis, a Leander, 12-3398
Hermis, Shakespearean character 2-559
Hermis, king of the Jews, 24-5323
 "Hermis and Marianna," by Hebbel, 12-3399
Heraclitus, Greek philosopher, 2-1320
 20-5185, 5187
Heres, a village of, 2-323
Heres, American naval, 12-3083
 of science, 12-3235
 of the nations, 1-127
 the Greek, painted by McEwen, 7-1235
Heron, age of, 2-3350
 and the traveler, 24-6292
 egg of, 7-face 1765, face 1760
 home of, 22-5745
 night, 2-2341
 the cat and the bumble bush, 12-4758
 varieties of, 2-1970, 1974, 2-2341
Herrick, Robert, poems of, 12-3771
 see also Poetry Index
Herring, a fish, 2-674, 10-2462, 2602-01, 12-3813
 4060 24-6294
 and sardines, 12-3854
 eggs of, 10-2601
 fisheries for, 12-3946-47, 3953
 for aquarium, 17-4493
 king of a fish 10-2479-80
 king of the, character in "Water Babies," 12-3839
 see also Clack Fish
Herringbone-stitch, in sewing, 4-989
Herring-gulls, birds, 7-1642-44
Herschel, Caroline, astronomer, 7-1670, 1682, 2-face 1859, 2-2394
Herschel, Sir John Frederick, astronomer, 2-323, 7-1675, 1682
Herschel, William, astronomer, 7-1675, 1682 2-1959
 Uranus and, 2-2249, 2294
Hertz, Heinrich Rudolph, and electric waves 2-2170, 17-4448
Hess, history of, 11-3895, 2906, 12-1241
Hesiod, and the stars 10-2645
Hesperides, apples of, 12-3474
 garden of the, 4-1052
 guardian-ship, 20-5186
Hesse-Cassel, troops hired by British 4-1000
Hesselius, Gustavus, Swedish painter, 12-4215 16
Hess Hotel, in Switzerland, 22-5547
Hessian-fly, injurious to grain 12-4205
 prey of other insects, 12-3300
Hessians, during the Revolution, 4-1000, 1001 05
Hesse, rubber-plant 22-579
Hewer, a statue, 12-4674
Hexham, offered bishopric 12-1794
Hextable, battle of, 1-209
Heyward, Major Duncan, British officer, 1-136
Hzechiah, king of Judah 12-4966
 "Hiawatha," by Longfellow, 2-1616
Hiawatha, and the birch-tree 22-5775
Hibernation, of animals, see Sleep, Animals' winter
Hibernus, Winter, 2-1164
Hiccup, cause and cure 7-1852
Hickory, varieties of, 22-5434
Hickory-nuts, of America 2-1997
Hickson, William Edward, poem, see Poetry Index
Hidalgo, rebellion of, 17-4401
Hids-and-Week, on the Hicathrus, 1-153
Hides, from West Indies 22-6044
Hieroglyphics, form of writing, 12-847, 17-4382
 see also Picture-writing
Highborn, Colonial, 22-6177
Highborn, see Flicker, a woodpecker
Highlanders, at Lucknow, 2-1119
 dancing Highlander, 24-6282
 in Prince Edward Island, 1-224
 plaid of, 12-8508
Highlands, of Abyssinia 12-4299 4306
High-mind, Mr., character in "Pilgrim's Progress," 2-1183
High-priest, breast-plate of, 24-6377
High Tatra, district of, 21-5600
High-water Shrub, see Marsh-elder
"Highway of Nations", see Suez, Isthmus of
Hildebrand, see Gregory VII, pope of Rome
Hildebrand, Sir, character in "Rob Roy," 2-1633
Hill, Aaron, poems: see Poetry Index
Hill, John, 17-4523
Hill, Mowland, and Fennypott, 2-1119
Hillington, M., his picture of Victoria, 12-3241
 "Hill of the City," see Acropolis, Athens
"Hills" of India, 2-1234
Hills, ascending and descending, 12-3513
 blueness of, 12-3337
 running down, 12-1817
 shadows on, 7-1230
 wind on top of, 17-4533

GENERAL INDEX

Himalaya Mountains, in Asia, 14-3683, 15-3923
 peaks of, 15-3922
 story of, 2-125
Hinda, of Rheinstern, 16-1236
"Hind and the Panther," by Dryden, 23-6030
Hindoo: see **Hindus**
Hinduism, a religion, 6-1636; 7-1711
Hindu Kush Mountains, cross Afghanistan, 15-3924
Hindus, and astrology, 8-1960
 and Canada, 22-5944, 5946
 in British Empire, 16-4081
 in West Indies, 23-6046
Hindustan, Aryans in, 7-1713
 part of India, 6-1632
Hip, of rose, 16-4131
Hip-bones, of body, 10-2468; 16-4200
Hip-joint, of body, 10-2467, 2572, 2571, 15-3881
Hipparchus, Greek astronomer, 7-1676
Hippocrides, and Clisthenes, 9-2315
Hippocrates, Greek doctor, 16-1625-26
Hippolyte, queen of the Amazons, 2-321, 197, 20-5186
Hippopotamus, an animal, 1-57; 4-1010-13, 21-5665-66
 attacks on man, 22-5805
 brain of, 14-3600
 capture of, 24-6212
 in Africa, 16-1306
 skin for leather, 11-2834
 teeth of, 12-3095
Hiram, king of Tyre, 20-5202
Hispania, 13-7448
 see also **Spain**
Hispaniola: see **Haiti**
Hispaniola, ship, 14-3681
"Historietas nacionales," by Alarcón, 20-5316
History, clay books of, 13-3479
 notebook for, 21-5532
 painting of, 7-1688
 what some think, 10-2523
"History of England," Bede's, 18-4791
 by Macaulay, 18-4741
"History of the World," by Raleigh, 21-5412
"History of Tom Jones," by Fielding, 7-1746
"History of Woman Suffrage," by Anthony and Stanton, 12-1121
Hitches, sailors', 13-3326
Hits: see **Baseball**
Hittites, Asiatic people, 19-1960
Hives, for bees, 11-2853, 2858
Hoactzin, a bird, 6-1509-10
Hoar-frost, effects of, 19-9336-37
 see also **Frost**
Hobart, chief town of Tasmania, 6-1371
Hobbes, Thomas, on association, 19-4996
Hobby, a falcon, 7-1500
Hoboken, line of shipping at, 22-5769
Hochelaga, Indian village, 3-554
Hock, of horse, 23-6062
Hockey, game of, 19-5027, 20-5220, 2227; 21-5406
Hockey-scarf, for curls, 5-1461
Hodgson, John, and safety lamp, 22-5810
Hoe, for gardening, 1-249
Hofer, Andreas, Tyrolean patriot, 1-472, 175
Hoffman, Dr. (August H.), poems: see **Poetry Index**
Hogarth, William, English artist, 3-764, 76, 17-1591, 1595
Hog cholera, a disease, 24-6468
Hogg, and sheep dog, 24-6323
Hogg, James, poems: see **Poetry Index**
 writer, 14-5765, 3770
Hogs, in United States, 10-2677, 2681
 skin for leather, 10-2686
 see also **Pig**
Hogweed, flowers of, 15-4016
Hohenlinden, battle of, 10-2596, 17-1261
"Hohenlinden," by Campbell, 14-3768
Hohenzollern, House of, eagle emblem of, 7-1658
 history, 10-2560
Hohenzollern, home of, 17-1551
Hohenzollern-Sigmaringen, Prince Charles of:
 see Charles, king of Rumania
Holbein, Hans, German artist, 17-4591
Holbein, Hans, the younger, German artist, 3-764
Hold, of a ship, 18-4618
Holder Hall, at Princeton, 17-4566
Hold fast! Let go! a game, 10-2589
Holds, breaking drowling, 5-1362
Hole, in the wall, 21-5479
Holiday, how they got a, 24-6344
Holiday-A-B-C, a game, 23-6078
Holidays: see **Days we celebrate**
Holiness, House of, in "Faerie Queene," 3-698

Holland, Counts of, 14-3712
Holland (John Philip), inventor of submarine, 22-5859
Holland, Joseph Gilbert, poems: see **Poetry Index**
Holland, and Paul Jones, 4-1006
 art in, 17-1590
 canals of, 10-2688
 cat farms, 19-5074
 colonies of, 14-3516
 costume of, 13-3438
 dykes of, 10-2616
 flag of, 21-5193
 language in, 14-3514
 history of, 1-151, 14-3538, 15-4048, 22-5859
 how the sea saved, 14-3594
 independence of, 10-2609
 Jews and, 24-6331
 linen in, 10-2686
 map of, 14-3517
 missiles in, 15-3879
 Napoleon and, 13-3316
 navy of, 4-1011-12
 province of, 14-3516
 Roman church in, 10-2552
 storks of, 8-1975
 war with England, 14-3517
 work-dogs in, 2-566, 568
 see also **butch in America**, **Netherlands**
Holland, a linen fabric, 14-3542
Holly, for Christmas, 17-1565
Hollyhock, plantain, 3-732, 5-1094
Holly-tree, of Europe, 14-3521, 3526
Holnby House, prison of Charles I, 7-1859
Holmes, Hogden, invented cotton-gin, 7-1837
Holmes, Oliver Wendell, American writer, 6-1609, 1617
 called Boston the Hub, 20-5399
 lines on Burns, 23-6033
 poem of "Old Ironsides," 12-3007-08
 poems: see **Poetry Index**
Holocanthus, a fish, 10-face 1600
Holstein, Duchy of, 10-2597, 14-3656, 3658
Holstein, kind of cattle, 2-406, 10-2681
Holt, Father, character in "Henry Esmond," 13-3309
Holy City: see **Jerusalem**
Holy City, vision of, in "Faerie Queene," 3-698
"Holy Family," by Michael Angelo, 17-1595
Holy Grail, a sacred cup, in "Table Round," 4-885
 Abbey's picture of, 16-1218
 legend of the, 21-5561
Holy Land, crusades to, 3-591, 6-1519
 pilgrimages to, 6-1549
 see also **Palestine**
Holy Roman Emperor, Rudolph of Hapsburg, 11-2885
Holy Roman Empire, Charlemagne and, 12-3078
 the ancient, 10-2552, 12-2886, 3192
 title given up, 10-2561, 11-2901
Holyrood Castle, and Mary, Queen of Scots, 9-2322, 12-3122
Holy Sepulchre, Eden and Defender of, see **Godfrey of Bouillon**
Holy Wars: see **Crusades**
Home, David: see **Home**, David
Home, Patrick: see **Home**, Patrick
Home for Sick Babies, at New York, 12-124
Home-plate, in baseball, 20-5217
Homer, Greek poet, 1-747, 10-2610, 20-5191, 5263, 5307
Homer, Winslow, American painter, 16-1715, 1751
Homer, a pigeon, 9-2217, 2219
Home Rule, for Ireland, 21-5558
Home-run: see **Baseball**
Homes, for child immigrants, 22-5946
 not made by hands, 21-5571
 of birds, 22-5745
 of man, 3-606
Homestead, in New South Wales, 6-1333
 on prairie, 22-5915
"Home, Sweet Home," by Payne, 12-3018, 3100, 14-3769
Home-Thrift Association, and box-furniture, 8-2036
Honduras, archaeology, 20-5326
 Caribs in, 23-6042
 history of, 17-1399, 4406
Honesty, cultivation of, 13-3325
 pattern of, 20-5350
Honey, food of Arabs, 23-6102
 from West Indies, 23-6045
 made by bees, 11-2851, 2855, 2957, 19-1878

GENERAL INDEX

- Money**, maple, 10-2502
 of ants, 11-2972
 of aphids, 11-2971
 of flowers, 18-4210
 poisonous, 17-4578
 sugar in, 3-701
- Honey-ant**, use of, 11-2972
- Honey-bee**, in insect, 11-2870
- Honey-guide**, of flowers, 17-1122
- Honey-locust**, a tree, 20-311
- Honeymoon**, what it means, 6-1416
- Honey-pots**: See Honey ants
- Honeysuckle**, a plant, 8-2019, 15-1015 13-17 6, 1761
 See also Woodbine
- Honolulu**, Hawaiian city, 8-2118 2151
- Honorius**, emperor of Rome, and the Jews, 9-2311
- Honvéd Memorials**, 21-5656
- Hood, Gen. John B.**, during Civil War, 8-10
- Hood, Robin**, and his merry men, 10-101
 21-1646
 character in "Ivanhoe" 7-1666
 stories about, 15-1136 3110
- Hood, Thomas**, poems, See Poetry Index
- Hood, of taken**, 7-1893-1900
- Hood, Mount**, in Oregon, 1-12 10-1676
- "Hoodoos"**, in Yellowstone Park, 3-8
- Hood River**, valley of, 10-1676
- Hoof**, of horse, 8-1006
- Hoof-prints**, follow, 7-1811
- Hoogh River**, in India, 6-111
- Hobbs, Captain James**, character in "Peter Pan," 11-888
- Hocks, Robert**, and telephone, 17-1116
- Hooker, Dr.**, comment on Lucretian, 9-1-4
- Hooker, General (Joseph)**, during Civil War, 8-1001
- Hooker, Sir Joseph**, story of chicken, 15-1890
- Hooker, Rev. Thomas**, character in "Ivanhoe," 2-1-23-6111
- Hook of Holland**, landing at, 14-110
- Hooks**, of steel, 15-1800 1811
- Hooper, John**, martyrdom of, 19-1091
- Hoopoe**, a bird, 7-faces 17-1161
 nest of, 22-47
- Hoop-race**, a game, 15-1010
- Hoops**, games played with, 15-1010
 of croquet, 17-1111
- "Hoosier Poet"**: See Poet Jim Whitely
- Hoot-Owl**, a bird, 12-1
- Hoover, Herbert**, and Ray Scott, 23-111
- Hop**, skip and jump, 14-611
- Hope**, character in "Pillgrim's Progress," 5-1116
 character in "Pillgrim's Progress," 5-1116
 in "Pillgrim's Progress," 5-1116
- Hopeful**, character in "Pillgrim's Progress," 5-1116
- Hopewell Cape, N. B.**, to look at, 1-
- Hopra, King**, character in "Egyptian Princess," 23-111
- Hopi**, Indian tribe, 14-1677 3011
- Hopkins, Commodore**, fleet of, 21-111
- Hopkins, Essek**, American communication, 12-3004
- Hopkinson, Francis**, and American, 21-111
 song of, 12-111
- Hopkinson, Joseph**, and "Hail Columbia," 12-802
 poems, See Poetry Index
- Hop-o'-my-thumb**, story of, 8-111
- Hops**, and ladybirds, 13-111
- Hop-Scotch**, a game, 15-1006
- Hopson, Admiral**, bravery of, 17-111
- Horace (Quintus H. F.)**, Roman poet, 2-111
 17-4116 20-108-01
- Horatio**, Shakespearean character, 2-111
- Horatius Coclès**, patriot, 6-111
- Horhound**, resembles stinging nettle, 15-811
- Horizon**, distance of, 9-2311
- Horn, Count**, hero of Netherlands, 14-311
 20-1215
- Horn, Cape**, Richard Daniell, 24-1136
- Horn, Alpine**, 22-111
 the fury, 8-111
- Horn**, for cutlery, 18-1801
 of animals, 2-108 10-114
 of unicorn, 1-215
 pictures on, 13-1119
 See also Nivhal Trigonon, in poem etc.
- Hornaday, W. T.**, on elephant antelope, 21-1008
- Hornbeam**, European tree, 13-1136 21-1111 11
- Hornbill**, a bird, 7-1719, 1761
 nest of, 22-5752
- Hornet**, in insect, 12-3194
 wasp, 11-2801
 bug that resembles, 13-453
- Hornet, ship**, 6-1118 12-1008
- Horn-worts**, aquatic plants, 7-1719
- Horrocks, Jeremiah**, English astronomer, 7-1181
- Horse**, use of, 9-2 0
 and a, 11-111
 and hot flies, 13-111
 and horse, 19-1116
 and chicken, 1-161
 and cells, 10-2111
 and Frederick the Great, 17-1115
 and groom, 7-1801
 anti-toxin obtained from, 24-108
 Arabian, 2-286 23-6018
 balancing toy, 22-111
 cruelty to burden, 12-111
 development of, 4-1111 14-111
 drift animal, 2-187 88
 circled story, 4-111
 of, 20-111
 fact of, 1-11 2-11 14-11 111
 fess, 11-111
 fox and the faithful, 4-111
 given away at coronation, 18-111
 hair of, 9-11 12-11
 horses of Homeric, 20-111
 horses of Henry, 3-771
 horses of St. Marks, 5-1116 12-11 111
 19-111
 in America, 1-11
 in "Culliver's Travels," 5-111
 in South America, 23-6001
 in story, 2-111
 in suit, 23-6001
 picture of, 24-111
 point of, 7-111
 pulling, account, 6-1606
 puzzle, 1-111
 rising of, 15-111
 simple way of drawing, 14-111
 skin for leather, 10-111 11-11 12-111
 story of, 23-6001
 studied toy, 6-1606
 teeth of, 12-111 111
 varieties of the, 23-6001
 when who, 17-111
- Horse-cars**, attraction of, 2-111
- Horse-chestnut**, flowers of, 11-818
 fruit of, 8-111
 in the, 14-111
 shells of, 15-111
- Horse-fan**, by Lehou, 14-111
- Horse fly**, animal, 12-111 13-111
- Horse-lacing**, a game, 5-111
- Horse-lindus**, a plant, 18-111
- Horse-rake**, for harvesting, 11-711 13-111
- Horseshoe Falls**: See Niagara Falls
- Horse-stingers**: See Horses
- Hoise, Winged**, a constellation, 10-2613
 See also Pegasus
- Horse, Wooden**, of, 1-111
- Hortensio**, Shakespearean character, 3-111
- Horwald**, in the, 16-111
- Hosau**, dithyramb, 15-811
- Hosmer, Harriet**, American abolitionist, 13-111
- Hospitaliers**, of the John, 23-611
- Hospitals**, British, 12-111
 founded by John, 11-111
 in "Culliver's Travels," 23-611
 Queen, Hospital, 10-111
- Hospital-ships**, moved, 23-611
- Hospital-sickness**, 24-111
 See also Gout
- "Hospital Sketches"**, by Alcott, 8-111
- Hotel Clany**: See Clany American
- Hotel des Invalides**, in Paris, 21-111
- Hothouses**, for plants, 15-111
- Hot Spring Land**, in New Zealand, 6-111
- Hot Springs, Ark.**, baths of, 23-111
- Houdon (Jean A.)**, French sculptor, 18-111
 18-166 23-111
- Houghton, Lord**, poems, See Poetry Index
- Hound**, problem concerning, 2-111
 shadow picture, 20-111
 the old, 12-111
 various kinds of, 24-611 611
 See also Hare and Hounds
- Hounds**, a constellation, 10-2613
- Hound's-tongue**, a plant, 16-111
- Hour**, making the, 6-1546
 unit of time, 14-3672
 when does it change, 3-688

GENERAL INDEX

- Hour-glass**, easy way to make, 22-5918
for telling time, 6-1511
- "Hours of Idleness,"** by Byron, 23-6035
- House**, crooked above street-fire, 9-2216
drawn by Twopeny, 21-5628
dust in locked, 18-1815
for doll, 8-2031
in Virginia, 6-1395
Indian, 1-17, 20; 5-1107
northernmost in America, 8-1911
out of drawing, 19-1225
Roman governors, in England, picture, 1-211
upon the sea, 1-79
see also Hut, Jack, house of
- Houseboats**, at Manila, 8-2155
- House-fly**, eyes of, 13-3301
- "House in the Waste,"** by Robert, 10-1327
- House-leek**, a rosette-plant, 15-1012
- House-martin**, a bird, 9-2215
nest of, 22-5731
- "House of Mirth,"** by Wharton, 8-1911
- House-spider**, 13-3379
- Housewife**, in "Heart of Midlothian," 7-1100
- House-wren**, a bird, 13-3161
- Houssain**, Prince, in "Alain Capet," 7-1100
- Houston**, Sam, "Texas Ruler," 23-7361
- Houyhnhnms**, country of, in "Gulliver's Travels," 5-1108
- How**, Bishop William Walsham, hymn of, 8-2011-17
- Howard**, Alice G., poems, see Poetry Index
- Howard**, Lady Elizabeth, married Hayden, 23-6029
- Howard**, Katherine, poems for, 19-5692
- Howe**, Elias, and "Cunning-machine," 11-2717
- Howe**, Dr. John Ireland, pin-machine of, 19-5692
- Howe**, Julia W., American writer, 8-2195, 2101, 12-3033
poems, see Poetry Index
- Howe**, Lord, drama, "Revolution," 4-1001
- Howe**, Dr. S. C., American philanthropist, 8-2101
trike died of, 1-278
- Howe**, General William, drama, "Revolution," 4-995, 1-278, 15-919-21
- Howells**, William Dean, American writer, 6-1611
- Howitt**, Mary, poem, see Poetry Index
- Howitt**, William, poems, see Poetry Index
- Howland Island**, American, 8-2147
- Howleglass**, stone of, 21-5664
- Howler**, a monkey, 3-2430
- "How they Brought the Good News from Ghent to Aix,"** by Broward, 23-6078
- Hrothgar**, king of Danes, 13-502
- Huaranca**, Peruvian community, 17-108
- Huascar**, an officer, 17-108
- Hubbard**, died in France, 8-1916
- Hubbard**, Mount, Canadian Rockies, 22-5778
- Hub of the Universe**, see Boston
- Hucknaback**, book cover of, 13-1828
- Huckleberry**, a fruit, 3-101, 17-1558-59
- Huckleberry family**, of blunders, 18-1761
- Huckleberry Finn**, character of Mark Twain, 23-1012
- Huckster**, a peddler, 18-1828
- Hudson**, Henry, character in "Red Van Winkle," 18-1861
explored America, 2-275, 277, 281, 595, 21-5177
navigator, 21-5178
- Hudson Bay**, Franklin and, 21-5158
fur-trading posts on, 18-1832
history of, 3-759
in Canada, 1-219, 3-559, 4-895
Indians about, 10-589
people about, 8-1919
- Hudson Bay Railway**, construction of, 9-2216
- Hudson Bay Territory**, policy of, 18-1621
- Hudson-Fulton Celebration**, Indian exhibit for, 20-5335
- Hudson Gate**, of City College, 17-1571
- Hudson River**, a boundary, 2-528
fish in, 15-3819
history of, 1-11, 2-276-77, 281
pallades of, 1-11
steamboat on, 10-2186
water carried under, 20-5193-94
- Hudson River School**, of art, 16-130, 1219
- Hudson's Bay Company**, and Northwest Territory, 5-1278
fur-traders, 1-90; 11-2875, 12-1822-23
posts of, 3-1917, 9-277
ships of, 9-2278
- Huerta**, General, president of Mexico, 17-1101
- Huggins**, Sir William, English astronomer, 11-2841
- Hugh**, character in "Barnaby Rudge," 11-2779
- Hugh Capet**, king of France, 8-2070, 9-2284
- Hughes**, Judge Thomas, English author, 10-4137
- Hugo**, Victor Marie, comment on French army, 10-2795
French writer, 18-4223; 20-5307, 5312
poems, see Poetry Index
- Huguenots**, and Charles I., 3-556
French Protestants, 2-276, 331; 7-1741; 8-2072, 2074-76, 14-3695
in America, 2-531, 3-555
in England, 9-2423
- "Huguenots, Les,"** by Meyerbeer, 13-3294
- Huldbrand**, and Indine, 15-4053
- Hull**, Captain Isaac, American naval officer, 12-3007
- Hull**, General William, surrender of, 3-759
- Hull**, Eng., B-hub centre, 15-3817
- Hull**, of a ship, 18-1618
- Hulls**, Jonathan, steamboat of, 10-2486-88
- Humayun**, ruler of India, 7-1113, 1716
- "Humble Romance,"** by Freeman, 8-2162
- Humboldt**, Friedrich H. A. von, German naturalist, 4-865, 867
- Humboldt Current**, and rain, 22-5871
- Hume**, Alexander, poems of, see Poetry Index
- Hume**, David, English writer, 18-1723; 20-5312
- Hume**, Grisel, beauty of, 21-5625
- Hume**, Patrick, a Governor, 21-5625
- Humorous**, arm bone, 10-1571, 2573; 18-4200
nature of the, 16-4289
- Humery**, Dr. Conrad, and Gutenberg, 14-3610
- Humiliation**, Valley of, in "Patriot's Progress," 5-1128-29, 1181
- Humming**, of telegraph lines, 7-1898
- Hummingbird-moth**, mimicry of, 13-3416
- Humming-birds**, and columbines, 18-1753
nets of, 22-5712
of America, 7-1755, 1759, 9-2311
size of, 7-1755, 1759
visions, 13-3157
- Humpback**, a ship, 10-2703; 15-2954
- "Humphrey Clinker,"** by Smollett, 7-1751
- Humphrey**, Master, character in "Old Currier's Shop," 11-2766
- Humus**, for plants, 15-3892
- Hundred Associates**, company of, in Canada, 3-556
- Hundred Days**, in "Count of Monte Cristo," 16-1316
of Napoleon, 2-460, 3-193; 9-2289; 10-2391, 13-3400
- Hundred Years' War**, of England and France, 8-2071-75
- Hungarians**, of Austria-Hungary, 10-2562, 11-2394, 2887, 12-3076, 13-3242; 21-5659
- Hungary**, bird's-eye view of, 21-5653
cabinet of, 11-2966
costumes of, 13-3136
delegations, 11-2905-06
gems from, 24-6382
government of, 11-2897
history of, 4-1059, 10-2550-51, 15-1996
homes of, 21-2973
parliament of, 11-2906
ranks and, 12-3193
see also Austria-Hungary, Huns, Magyars
- Hunger**, and wrath, 18-1691
fever of, 13-5509-10
is the best sauce, 20-5201
what makes us hungry, 1-166
- Huns**, and Rome, 20-5182
Austria and, 11-2896, 2898
history of, 4-1051, 10-2550-51, 15-1926
invasions of, 9-2317
- Hunt**, Leigh, poems, see Poetry Index
- Hunt**, Major, death of, 8-2100
- Hunt**, Simon, and Shakespeare, 21-5579
- Hunt**, William Morris, American painter, 16-1271, 1253
- Hunter**, John, a doctor, 18-1625, 1631
- Hunter**, John, naturalist, 4-869
- Hunter**, William, a doctor, 18-1631
- Hunter**, William, martyr, and the sunshine, 19-1094
- Hunter**, a constellation, 10-2639, 2641
- Hunters**, Indian, 18-1834
of the Wild, 24-6211
- Hunting**, dogs for, 24-6326
in South, 4-966
none in Yellowstone Park, 3-587
of Indians, 1-16, 21; 10-2576
with falcons, 7-1899
- Huntingdon**, Earl of, father of Robin Hood, 10-3629

GENERAL INDEX

- Hunting-Grounds**, the Happy, 10-2578
"Hunting of the Shark" authorship of, 8-1482
Huntsman's Cup, 11-2885
 see also Pitcher-plant
Huntsman, nature's winged, 7-1893
Hunu, Peruvian district, 17-4508
Hunyadi, John, Hungarian hero, 11-2900;
 12-3190; 21-5656
Hunyadi, Matthias, king of Hungary, 11-2900;
 13-3484
Hurgo, character in "Gulliver's Travels," 8-1334
Huron-Iroquois, Indian stock, 1-21
 see also Iroquois
Huron, Lake, in America, 1-14, 228; 3-556;
 28-6120
Hurons, Indian tribe, 1-21, 196; 3-556; 10-2575;
 11-2784
Huskies, sledge-dogs, 15-4061
Huss, John, Bohemian religious reformer,
 10-2594, 11-2902, 12-3190
Hussain Kamil, sultan of Egypt, 16-4304
Hussey, Obed, reaping machine, 11-2714
Hut, Czar Peter's, 14-3724
 mankind's different, 3-606
 of Hawaiians, 8-2151
Hutchinson, Anne, life of, 12-3119
Hutchinson, Colonel, defence of Nottingham
 Castle, 14-3693
Hutchinson, John, colonial settler, 12-3119
Hutchinson, Mrs. Lucy, 14-3693
Huxley, Thomas H., an English philosopher,
 4-865, 872
 comments of, 11-2915, 2918; 16-4162
Hwang, who served his father, 23-6028
 18-1676; 20-5230
Hyades, stars, 10-2645
Hyde, Edward see Clarendon, Earl of
Hyde Park, owned by monks of Westminster,
 18-4681
Hyde Park Corner, arch at, 19-5039-40
Hydnum caput-ursi see Mushrooms, bear's head
Hydra, Grecian island, 16-4267
Hydra, killed by Hercules, 13-3371, 20-5185
Hydragryum: see Mercury, element
Hydranges, treatment of, 4-811
Hydroaeroplane: see Hydroplane
Hydro-carbon, contains hydrogen and carbon,
 7-1888
 in comets, 10-2545
Hydrogen, and heat, 17-4503
 atoms of, 6-1570
 best fuel, 14-3773
 compounds of, 7-1693, 1813
 gaseous element, 5-1243
 in alcohol, 23-5992
 in balloon, 1-173, 4-916, 22-5810
 in blood, 7-1647
 in carbo-hydrates, 7-1890
 in celluloid, 19-1875
 in comets, 10-2545
 in flame, 20-5168
 in gas-making, 2-418
 in stars, 15-3908
 in haemoglobin, 6-1130
 in hydro-carbons, 7-1884
 in kerosene, 16-4110
 in marsh-gas, 14-3569
 in oils, 13-3384
 in Orion nebula, 11-2847
 in planets, 9-2382
 in smoke, 17-4369
 in spectrum, 11-face 2736, 2711
 in stars, 8-1969; 11-2711
 in sugar, 3-701, 13-3387; 23-5991
 in sun, 13-3388; 19-5025
 in sun's corona, 8-2094
 in water, 4-918, 8-1031, 1189, 1197, 7-1791,
 9-2251; 12-3126; 13-3388, 3505, 19-5021-23;
 24-6309
 liquefied, 16-4086
 measure of specific gravity, 15-3828
Hydrogen sulphide, a compound, 6-1586
Hydrometer, measures specific gravity, 15-3827,
 3829
Hydrophobia, a disease, 10-2470; 24-6364
Hydrophytes, water-plants, 19-5085
Hydroplane, invention of, 1-176, 181
Hydroxides, what they are, 7-1818
Hydroxyl, what it is, 7-1816, 1849
Hyena, an animal, 1-158, 162; 24-6212
Hygelac, king of the Geats, 13-3502
Hygrometer, meaning of, 15-3968
Hygrophorus conicus: see Mushroom, red-julco
Hyksos, shepherd-kings, 12-4848
Hymn, dead boy who sang a, 2-499
 form of poetry, 2-369
 writers of hymns, 8-2018
"Hyperion", by H. W. Longfellow, 6-1614
Hyphen, lack of, 22-5743
Hypnotism, power of, 20-5178, 5191
"Hypo", for photography, 11-2719
Hyraz, an animal, 4-1011-12
- ## I
- I**, what it represents, 3-688
Iago, Shakespearian character, 2-443
Iamby, a court jester, 17-4247
I'Anson, Frances, 14-3769
Iberian Mountains, in Europe, 13-3337
Iberian Peninsula, map, 13-3339
 of Europe, 12-3073; 13-3337
Iberians, last stronghold of, 3-2424
 people of Iberian Peninsula, 13-3338
Ibex, a kind of goat, 2-410, 411
Ibis, a bird, 6-1973, 1976; 8-2341
Ibsen, Henrik, Norwegian writer, 20-5315
Ice, action of, 13-3250
 and heat, 16-4229; 17-4501-03
 at the Poles, 4-958
 bursts pipes, 14-3684
 electricity and, 8-2164
 formation of, 16-4084
 in early United States, 6-1394
 slipperiness of, 12-3146
 specific gravity of, 15-3828
 turning to liquid, 19-4877
 weight of, 17-4371
 where we get, 14-3757
 why cloths keep it cool, 3-692
 see also Glaciers
Ice, Age of, a period, 1-56; 8-2081, 13-3250,
 23-6119
Icebergs, and broken glaciers, 13-3250, 15-3911
 floating of, 16-4270-71
 of cane e-grease, 16-4701-06
Iceberry, Burbank's, 14-3565
Ice-boats, in Canada, 20-5224
Ice-cap, near North Pole, 8-2081
Ice-cream, wetness on outside of cup contain-
 ing, 12-3150
Ice-crystals, snow is, 12-3047
Ice Haven, arctic bay, 21-5458
Iceland, birds of, 22-3752
 geysers of, 13-3251
 island of, 2-271, 14-3652, 3658
 visits to, 21-5456
Icelanders, in Canada, 1-230, 21-5610, 22-3916
Iceland-spar, polarization of, 20-5211, 5214
Ice-man, and the Great Fire, 7-1913
ICES, made without freezer, 15-3961
Ice-sheets, 1-14-15
 see also Glaciers, of United
 States
Ice-yachts, racing of, 20-5220
 sport with, 20-5222
Ichneumon-fly, an insect, 12-3018-19, 3021, 319
 3201; 13-3298, 3300
Ichthyosaurus, prehistoric animal, 1-50, 11
 11-2916, 2919
Ictinos, Athenian architect, 20-5207
Idaho, admitted, 13-3491
 canoes in, 1-13
 flower of, 22-5815
 fruit in, 3-651
 gems from, 24-6382
 irrigation in, 21-5418
 metals of, 10-2680
Idas, a hero, 6-1526
Ideas, association of, 19-5080
 see also Association
Idiograms, Chinese writing-signs, 13-3484
Idiot, meaning of, 20-5303
Idle Lake, in "Faerie Queene," 3-700
Idler, a periodical, 18-4727
Iduna, and the golden apples, 14-3622
"Idyls of the King", by Tennyson, 23-6037
Ignatius, St.: see Loyola, St. Ignatius de
Ignis-fatuus: see Will-o'-the-Wisp
Igorrotes, in the Philippines, 8-2152-53, 2154
IGUANA, a lizard, 8-1211, 1217
Ignanodon, prehistoric animal, 1-50, 54
Ilaia, death-place of Livingstone, 2-301
Ilderim, Sheikh, character in "Ben Hur,"
 20-5259
Ile de la Cité: see Isle of the City
"Iliad", by Homer, 1-73; 20-5200, 5307
 translated by Pope, 22-5030

GENERAL INDEX

- Ilmu:** see Troy
- Illecillewaet Glacier,** in the Selkirks, 22-5778
- Illecillewaet Valley,** in Canada, 7-1771
- "I'll hang My Harp on a Willow Tree,"** song, 14-3769
- Illinois,** Indian tribe, 2-278; 23-6111
- Illinois,** admitted, 7-1836; 12-3490
- chickens in, 10-2678
- coal in, 10-2680
- flower of, 22-5815
- hogs in, 10-2677
- in Northwest Territory, 7-1834
- iron industry of, 22-5688
- limestone of, 10-2680
- oil in, 16-4166
- petroleum in, 10-2680
- presidents from, 2-2382
- Illinois River,** explored, 2-278; 23-6113
- Illinois University of,** building for women, 17-4573
- Illness,** never suffered twice, 10-2470
- Il River,** in Europe, 11-2768
- Ilyria,** Duke of, Shakespearian character, 2-445
- Ilmen, Lake,** in Moscow, 15-3802
- I love my love,** a game, 1-253
- "Il Penseroso,"** by Milton, 22-5674
- "Il plant, bergère, il plant, bergère,"** French song, 14-3772
- Images,** pin stuck into, 19-5002
- "Imaginary Invalid,"** by Molière, 20-5312
- Image,** an insect, 13-2966; 14-3011
- Imbecile,** what it is, 14-3692
- Imitation,** power of, 20-5191
- "Imitation of Christ,"** by Thomas à Kempis, 15-4035
- Immermann, Karl Leberecht,** German writer, 13-3398
- Immigration,** into Canada, 22-5941
- Immigration Reception Hall,** in Winnipeg, 22-5916
- Immortality,** land of, 7-1908
- Immunity,** to disease, 10-2471
- to poison, 13-3417
- Imp,** with a disappearing head, 13-3432
- Impeachment,** of United States officials, 6-1436
- pardons for, 6-1436
- Imperator,** Roman title, 20-5280
- see also Emperor
- Imperialists,** party in France, 9-2391
- Imperial Valley,** ladybirds in, 13-3303
- Implacable, Mr.,** character in "Pilgrim's Progress," 5-1183
- Imponderabilia,** meaning of, 16-1084
- Impressment,** of American sailors by England, 6-1397-98
- Ina, roi du Wenrex,** 9-2316; 15-4055
- Inauguration Day,** a holiday, 17-4470
- Incas,** gold of the, 20-5318
- ruling class in Peru, 9-2225; 16-1606, 4608
- Ince, William,** cabinet-maker, 23-6171
- Inch,** unit of length, 14-3672
- Incisors,** kind of teeth, 8-2078-79
- Income-tax,** and constitutional amendment, 13-3496
- levy of, 6-1438
- Indemnity:** see France, indemnity of
- Independence Day,** celebration of, 17-1463, 4468
- Independence, War of,** 5-1114
- India,** and astronomy, 6-1675
- and Burke, 16-4158
- and mountain passes, 15-3924-25
- animals in, 1-152-54, 159, 162; 2-287, 297, 406-08, 508, 529-30, 3-681, 802-03; 4-878, 1012; 13-3361, 3364; 21-5573; 22-5801; 24-6246, 6376
- birds of, 6-1504, 1567, 1560; 7-1759, 1761, 1763, 1897, 1900; 8-1971, 1974-75; 22-5752
- bowls in, 5-1263
- buttermaking in, 5-1132
- children in, 9-2326
- coil-rope in, 15-4005
- costumes of, 13-3439
- cotton in, 9-2384; 19-4885
- ebony from, 19-5034
- empire of, 7-1713
- empress of, 16-4079
- fish of, 10-2708
- forests denuded, 14-3742
- fruits in, 3-650
- gems from, 24-6380-81
- glass of, 5-1263
- heat of, 4-1084
- history of, 1-65; 5-1113-15, 1118, 1325-26; 8-2076; 11-2940; 16-4077-79
- insects of, 12-3201-02, 3204; 18-3306, 3447
- India, Kafir corn in,** 23-5968
- map of, 6-1630
- natives of, 7-1717
- new route to, 5-1167
- pearl of the East, 6-1631
- philosophy, 12-3028
- religions of, 12-3023
- reptiles of, 5-1210, 1213
- rosewood from, 19-5034
- rubber grown in, 14-3569
- sacred monkeys of, 24-6244
- serpents of, 6-1381-84, 1386, 1631
- shoe worn in India, 12-3111
- stories told in, 23-6133; 24-6292
- taxes in, 5-1315
- tea in, 23-5971-72, 5979
- temples of, 9-2242
- test for thieves, 8-2171
- tombs of, 6-1636-37
- trees of, 13-3267
- wages in, 11-2711
- water supply in, 21-5416
- Wellington in, 17-4366
- wild dogs of, 24-6319
- Indiana,** admission of, 7-1836, 13-3490
- flower of, 22-5815
- in Northwest Territory, 7-1834
- limestone in, 10-2680, 20-5349
- oil in, 16-4166
- president from, 2-2382
- Indian-bean,** 21-5438
- see also Untala
- Indian Civil Service,** work of, 6-1638
- Indian corn:** see Corn
- Indian Girl,** a statue, 18-4667
- Indian Hunter,** a statue, 18-4669, 4671
- Indian Mutiny, or Sepoy Rebellion,** in India, 5-1118; 7-1720
- Indian Ocean,** as boundary, 18-3855
- storms of, 6-1630, 1632
- Indian Paintbrush,** state flower, 22-5816
- Indian Pink:** see *Arethusa*, an orchid
- Indian Pipe,** a flower, 12-3065, 3068
- Indian-race,** 16-4292
- Indians,** and early colonists, 2-274-78, 281, 525, 530, 532-33; 3-556
- and Helen H. Jackson, 8-2100
- and Northmen, 2-272
- and Northwest Mounted Police, 18-4622
- and school republic, 24-6390
- and the fur-trade, 18-1834
- and western settlers, 6-1397-98
- as they look to-day, 11-2783
- camouflage of, 13-3509
- dogs of, 2-508
- during the Revolution, 4-1004
- exhibits of, 20-5328
- food of, 20-5219, 5338, 5342
- games of, 20-5222
- hut of, 23-6099
- in Alaska, 15-4060
- in early colonial wars, 4-894; 13-3493
- legends of, 5-1105
- life of, 5-1107
- name of, 1-16; 16-4078
- North American, 1-16, 64; 2-525
- of Canada, 1-230; 8-1916-20, 10-2375, 11-2781
- of Eastern America, 24-6272
- of Pacific coast, 20-5328
- of South America, 17-4508
- of the Far North, 10-2580
- on canal-boats, 18-4768
- plants used by, 20-5219
- removal of, 7-1840; 13-3491
- silent messages of, 9-2268
- snowshoe and toboggan of, 20-5222
- stories about, 1-195
- straw Indians, 19-5124
- tales told by, 7-1913
- Trent valley, route of, 1-228
- United States, care of, 6-1437
- use of plants, 21-5434, 5436
- weave bark, 21-5429
- see also Elliot, John, French and Indian Wars, Marquette, South America, republics of, etc.
- Indian Territory:** see Oklahoma
- Indian-turnip:** see Jack-in-the-Pulpit
- India-rubber,** effects of, 12-3149
- elastic, 19-5019
- in fountain-pen, 22-5875-77
- not porous, 3-693
- India-rubber-plant,** of conservatories, 22-5794
- Indicolite:** see Tourmaline
- Indigestion,** cause of, 9-2364

GENERAL INDEX

- Indigo**, a dye-plant, 4-906, 994
Indigo-bird, the common, 9-2345
Indulgence, Papal, what it was, 2-196
Indus River, in India, 6-1631-32; 15-3923, 3930
Industrial Disputes Investigation Act, 16-4129
Inertia, law of, 13-3129
 property of matter, 11-2911
"Inex" by Evans, 8-2098
Infant Ceres, a portrait bust, 18-4668
"Infelice" by Evans, 8-2098
Infidels: see **Moors**
Infeld, of baseball, 20-5247
"Information" in telephone service, 2-338
Infusoria, aquatic organisms, 9-2405
 story of, 14-3664
Ingelow, Jean, poems: see **Poetry Index**
Ingersoll, Robert, comment on Lincoln, 3-747
Ingots, of iron, 22-5697, 5701, 5702
Inhaling, bad habit, 13-3417
Inheritance, laws of, 14-3781
Injured: see **First Aid to the Injured**
Ink, absorption of, 8-2082
 for printing presses, 14-3615
 invented by Egyptians, 13-3484
 invisible, 6-1302
 of cuttlefish, 10-2484-85
 on wood, 22-5741
 stains of, 12-3149; 17-4494; 20-5177, 21-5611
 Tom and Nora learn to write with, 13-3377
 what it is, 6-1668
 writes best on paper, 7-1653
Ink-berry, a shrub, 17-4565
Inkerman, battle of, 14-3729
"In Memoriam" by Tennyson, 23-6037
Inn, dinner at the, 20-5181
Innertkirchen, Swiss town, 22-5846
Inness, George, and **Tiffany**, 18-4221
Inness, George, Jr., American painter, 16-4247-49
Innings: see **Baseball**
Innkeeper, character in "Don Quixote", 4-903
Innocence, picture by Reynolds, 17-1591
Innocent III, Pope of Rome, and Vatican, 19-6098
 power of, 18-4796-97
Inn River, in Europe, 12-2984
Innsbruck, in Austrian Tyrol, 11-2903, 12-2981
"In Ole Virginia", by Page, 4-1621
Inquisition, and Galileo, 7-1680; 8-1963-64
 and St. Dominic, 15-4031
 court of the, 13-3341
 in the Netherlands, 14-3111; 20-5225
 in "Westward Ho!", 14-3715
Insane, treatment of the, 18-4631
Inscriptions, mysterious, 21-5151
 of Asiatic lore, 19-4954
Insects, and flowers, 6-1283, 15-3812-16, 4013, 4016-16
 and insectivorous plants, 14-3566, 15-3814
 attracted by putrid odor, 15-3893
 backboneless animals, 3-671
 communication between, 22-5813
 development of, 14-3665-66
 eggs of, 1-49
 exhibit of, 20-5382
 eyes of, 16-4261; 23-5995
 foes of man, 12-3195
 food for wasps, 11-2860
 friends of man, 13-3297
 in the jumping beans, 10-2475
 injurious, 8-1519; 12-3206; 14-3786
 killed by fungus, 18-3891
 world of, 11-2849
 see also **Leaf-Insect**, **Mimicry**, **Stick-Insect**, etc.
Insight, what it means, 2-514
Inspector, and burgomaster, 22-5743
Inspiration, act of, 7-1652; 24-6309
Instinct, of animals, 1-166; 4-917
 of humanity, 20-5188
Instruments, ancient surgical, 18-4626
 for watching sun, 8-2092
 musical, 11-2782; 19-4907; 21-5144
 surgical, 18-4803
Intellect, importance of, 20-5188
Intendant: see **New France**, **intendant of**
Intercolonial Railway, construction of, 9-3274
Interdict, of Pope, 3-594
Interest, and thinking, 19-5081
Interior, United States Department of, 6-1137
Interlaken, Swiss town, 12-2985
Interpreter, character in "Pilgrim's Progress", 5-1127, 1188
Interstate Commission Act, 13-3491
Intervals, musical, 16-4094
"In the Tennessee Mountains" by Craddock, 8-2101
Intra-molecular, meaning of, 7-1617
Introductions, a game, 22-5919
Invalids, gardens for, 23-6080
 oxygen used for, 5-1215
Invention, type of mind for, 19-4998
Inventor, picture of, 3-662
Inventors and Inventions, American, 11-2711
Invertebrates, animals without backbones, 3-675
 Involucres, of flowers, 16-4210
Iodine, for invisible and fading inks, 5-1302
 how to remove, 2-488
 non-metallic element, 5-1314
 test for starch, 11-2728
Iolcus, town, and Jason, 1-203
Iolus, friend of Hercules, 20-5185
Iona Island, monastery on, 18-4788, 4790; 21-5552
Ionia, art of, 16-4172
Ionians, Greek tribe, 20-5202
Iopa, land of, 4-1052
Iowa, admitted, 7-1846; 13-3492
 and Louisiana, 6-1396
 flower of, 22-5815
 hogs in, 16-2677
Iquazu Falls, in South America, 17-4511
Iran, plateau of, 15-3863
Ireland, animals in, 1-157, 160, 2-405, 508
 arms of, 7-1657
 birds of, 7-1893
 butter in, 5-1183
 Christianity in, 18-4788, 4790
 disturbances in, 4-1065
 epidemic in, 2-476
 faeries of, 3-547
 flag of, 9-2354
 folk-lore of, 6-1181
 gems from, 24-6382
 given by Adrian IV, 18-1796
 history of, 2-470; 3-592, 773, 4-859, 1036, 1037
 5-1115 16; 7-1857
 linen in, 10-2686
 maize in, 11-2950
 national plant of, 22-5816
 Northmen in, 14-3652
 parliament of, 5-1116
 police of, 20-5397
 rain in, 12-3148
 rebellion of, 21-5409
 story of, 21-5551
 Wentworth governed, 7-1863
"Irene" by Johnson, 18-4726
Ireton (Henry), English parliamentary general, 4-1010, 7-1866, 14-3693, 18-4686
Iridium, a metal, 13-3484, 22-5876, 5879
Iris, a plant, 7-1738; 12-3064; 19-5091, 20-5230
 see also **Fleur-de-lys**
Iris, of the eye, 13-3510; 16-4330; 22-5889
Irish, in America, 2-531
 in Canada, 14-3732; 16-4079
 music of, 5-1087
"Irish Melodies" by Moore, 14-3770
Irishwoman, character in "Water Babies", 15-3831
Irkutsk, Siberian town, 15-3901
Iron, and fire, 3-663
 and magnetism, 8-2167; 20-5356, 21-5528
 and steel, 14-3685
 bending when hot, 14-3775
 burning of, 19-1871
 color of compounds, 22-5723
 conductor of heat, 4-1086; 5-1317, 17-4580
 effect of oxygen on, 7-1792
 fatigue of, 15-4022
 floating of, 14-3775
 for spoons, 18-4805
 for the blood, 23-6110
 from Brazil, 20-5371
 galvanized, 10-2680
 in Canada, 21-5544; 22-5780; 23-6092
 in Chile, 20-5366
 in eggs, 13-3275
 in foods, 6-1431
 in Germany, 11-2766
 in haemoglobin, 6-1430
 in milk, 11-2828
 in Newfoundland, 24-6296
 in Philippines, 8-2152
 in Russia, 15-3798
 in Spain, 13-3347
 in Sweden, 14-3660
 in the stars, 8-1969
 made in colonies, 4-994
 making, 22-5687-88
 metallic element, 5-1316

GENERAL INDEX

Iron, meteoric, 7-1882
of the United States, 10-2678
salts of, 20-5177
smelting of, 4-1042
specific gravity of, 15-3825, 3828
strength of, 1-23
sulphate of, 13-3479, 3484
temperature of, 13-3388
tiredness of, 21-5516
weight of rusty, 12-3227
why it sinks, 3-895
see also Oxidation, Rust, Steel, etc.
Iron, Age of, a period, 2-1316
"Iron Chancellor", see Bismarck, Count von
"Iron Duke", see Wellington, Duke of
Iron Gate, of the Danube, 21-5652, 5658
Iron Industry, in America, 10-2684
Iron Mountains, gates of, 11-2902
Iron-oxide, a compound, 12-3227
Ironsides, Cromwell's troops, 2-523; 4-1037-38, 7-1853, 1865, 21-5556
Ironsides, a locomotive, 3-605
Ironweed, a plant, 19-5092
Ironwood, see Hornbeam
Iroquois, confederacy of Indian tribes, 1-21, 196; 3-556, 558; 7-1673, 10-2575; 11-2781-85, 20-5335
Iroquois, Canadian town, 23-6123
Irradiation, of bright objects, 11-2911
of things, 13-3389
Irrigation, for fruit, 22-5718
in Egypt, 16-4304-05
in South America, 17-4510
in United States, 9-2379
systems of, 21-5416
works for, 11-2710
Irving, Henry, portrait by Whistler, 16-1253
Irving, Washington, American writer, life of, 6-1609-10, 22-5831
home of, 6-1611
portrait bust of, 18-4668
Is, ways of saying, 5-1287
Isaac, of York, in "Ivanhoe," 7-1664
Isaac, son of Abraham, 24-6329
Isaacs, Sir Rufus: see Reading, Earl
Isaacs, Samuel, rescued man, 18-4090
Isabel, character in "Henry Esmond," 13-3309
Isabel, Princess, of Brazil, 20-5370
Isabella, Shakespearean heroine, 3-561
Isabella I, queen of Spain, and Charles V, 11-2898, 13-3340-42, 3344
and Columbus, 1-62; 10-2445; 17-1164
flag of, 1-58
"I sailed from the Downs in the Nancy," by Mordaunt, 14-3766
Ischi, baths of, 23-6052
Iselle, and Simpon tunnel, 24-6260, 6270
Isengrim, the wolf, 21-5570
Isar River, in Bavaria, 10-2594
Ismaelites, bought Joseph, 11-2938
Isinglass, from air-bladder of fish, 10-2602
Islam, doctrine of Mahomet, 6-1550, 7-1714
Island Range, in Canada, 22-5778
Islands, and coconuts, 15-3890
climate of, 7-1878; 16-4313
disappearance of, 11-2920
made by coral animals, 4-921
making coral, 9-2408
wandering, in "Faerie Queene," 3-700
Isle of the City, in Paris, 21-5534-35
Isle Royale, in Lake Superior, 23-6120
Ismael, khedive of Egypt, 16-4304
Ismael, shah of Persia, 15-3862
Isolt, and Tristram of Lyonesse, 13-3282
Isfahan, capital of Persia, 15-3859, 3862-63
I spy, game, 3-618
Israel, Biblical character, 24-6330
Israel, in "Treasure Island," 14-3634
Israel, kingdom of, 24-6330
Israelites, and David, 24-6284
code of health for, 18-4626
in Egypt, 11-2938; 18-4849
learned leather-making, 11-2833
standards of, 7-1657
see also Hebrews, Jews
Issues, battle of, 5-1326; 20-5147
Italian, language, 16-4097-98
Italians, and oyster farms, 10-2618
in Brazil, 20-5371
in Canada, 22-5946
in Ireland, 21-5409
in South America, 18-4610
Italian Somaliland, in Africa, 16-4308
Italy, and Germany, 10-2555
animals in, 2-410

Italy, cave in, 7-1803
costume of, 13-3435
earthquake in, 11-2920
flag of, 7-1658
folk-lore of, 6-1477
Francis and, 9-2290, 2426
fruit in, 3-650
glass in, 5-1263
Greeks in, 20-5203
hemp in, 15-4007-08
history, 1-134; 2-334, 435; 5-1167; 11-2905
in Africa, 16-1807
insects of, 12-3201
irrigation in, 21-5416
Jews in, 24-6334
land of romance, 12-307
legendary history, 1-78
map of, 12-3012
music of, 5-1087
Napoleon and, 9-2286, 2288; 13-3346; 17-4364
paper in, 13-3181
pottery of, 17-4540
revolution of, 12-3086
Roman Church in, 10-2552
sculpture in, 16-1173
settlement of, 10-2550; 20-5271
silk in, 7-1829
sky of, 20-5398
stories of, 19-4994
tarantula in, 13-3361
see also Rome
Itasca Lake, reputed source of Mississippi, 23-6071
Ithaca, (Greck Island, 1-76
Ithaca, N. Y., college at, 17-4576
Ithamar, character in "Ben Hur," 20-5257
Ithuriel, in "Paradise Lost," 22-6680
Iturbide, Agustin de, emperor of Mexico, 17-1401
Ivan, Russian doll, 13-face 3434, 3438
Ivan III, the Great, czar of Russia, arms of, 7-1658
reign of, 14-3723
Tower of, 15-3802
Ivan IV, the Terrible, czar of Russia, reign of, 14-3723-24
Ivanhoe, hero of "Ivanhoe," 7-1664
"Ivanhoe," by Scott, 6-1496; 7-1663
Ives, Frederic E., and color printing, 14-3615
Ivory, and electricity, 8-2163
carvings of, 20-5330
for cutlery and spoons, 18-4802, 4804
for pens, 19-5001
mammoth, 15-3804
of elephants, 2-292
of walrus, 4-1076
Ivory-bill, a woodpecker, 9-2348
Ivory, Maiden of, who came to life, 4-980
Ivy, flowers of, 15-3816
grows in water, 10-2582
how it clings, 1-169
how to draw leaf, 3-744, 746
leaves for pattern, 6-1473; 9-2232
leaves of, 6-1473
"Ivy Green," music for, 14-3768

J

J, story of, 13-3433
Jabne (Jamnia), school at, 24-6334
Jacana, bird, 8-1978
Jack, and the bean-stalk, 12-3207
Jack, house of, 21-5620, 22-5903, 23-6013; 24-6231
Jack, luck of Simple, 11-2754
"Jack," meaning of, 9-2254
Jackal, and the lion, 21-5481
blue, 24-6292
dogs descended from, 24-6320
life-history, 1-155, 162
trick of, 21-5482
Jack-boot, form of boot, 12-3106
Jack-by-the-hedge: see Hedge-garlic
Jackdaw, a bird, 7-1901-02
and the pigeons, 18-3878
egg of, 7-face 1760
Jackel, for diver, 24-6312
magician's, 6-1605
Jack-in-the-Pulpit, a flower, 11-2882
Jack-o'-dandy, dancing lights, 17-4441
Jack-o'-lantern: see Will-o'-the-Wisp
Jackson, and telegraph, 17-4445
Jackson, General Andrew, administration of, 13-3488, 3491
and Creek uprising, 6-1399

GENERAL INDEX

- Jackson, General Andrew**, as president, 3-779, 783; 7-1810
at New Orleans, 6-1400-01; 13-3490
born in North Carolina, 9-2382
bust of, 18-4667
incidents of life, 10-2438, 2443
lived in Tennessee, 9-2382
- Jackson, Dr. Charles T.**, and Dr. Morton, 18-4633
- Jacksol.** (Major Frederick G.), Arctic explorer, 21-5157, 5160
- Jackson, Helen Hunt**, 8-2100
poems: see Poetry Index
- Jackson, Dr. Hughlings**, law of, 21-5441
- Jackson, Rachel**, wife of Andrew, 3-785
- Jackson, Robert**, brother of Andrew, 3-784
- Jackson, Thomas J.**, or "Stonewall," and Virginia Military Institute, 23-5958
and West Point, 18-4735
Confederate general, 8-2045, 2047-48, 2050
- Jackson, William**, married Helen Hunt, 8-2100
- Jackson**, capital of Mississippi, 23-5960, 5966
- Jackson Monument**, a statue, 18-4668
- Jacksonville**, city in Florida, 23-5960
- Jack-the-Giant-Killer**, story of, 7-1810
- Jacob**, Biblical character, 24-6330
- Jacob and Rachel**, a game, 5-1303
- Jacobins**, political party, 16-1105-06, 1108
- Jacobins**, pigeons, 9-2219
- Jacobite Rebellion**, the second, 6-1498
- Jacobites**, characters in "Henry Esmond," 13-3309
rising of, 6-1623
songs of, 14-3770
- Jacob's-ladder**, the mysterious, 22-5710
- Jacopo**, character in "Count of Monte Cristo," 17-4139
- Jacopo della Quercia**, Italian sculptor, 16-1173
- Jacques Cartier River**, in Canada, 23-6124
- Jade**, Asiatic trade in, 15-3928
- Jago, St.**, character in "Charles O'Malley," 12-2975
- Jaguar**, a dangerous animal, 22-5801, 5806
life-history of, 1-156, 159
picture, 1-156
- Jainism**, a religion, 12-3023-25
- Jam**, alcohol produced in, 7-1890
- Jamaica**, birds of, 7-1758
fruit in, 3-650
history, 4-1011, 17-4164
island of, 23-6041, 6044-46, 6049
mongoose in, 1-161
- James I.**, king of England, abolished sanctuary, 13-4684
and Bacon, 21-5489
and Bohemians, 10-2558
and gunpowder plot, 7-1806-08
and Ireland, 21-5556
and Nova Scotia, 21-5543
and Raleigh, 21-5112; 24-6275
and Virginia, 2-521
Henry IV's comment on, 7-1857
incidents in life of, 4-862, 1035, 1041; 7-1658; 12-3110, 16-1077-78
sent embassy to India, 7-1716
tyranny of, 2-523
- James II.**, king of England, and American colonies, 2-529, 531, 533
and battle of Boyne, 4-1041; 14-3766
and episcopacy, 7-1773
and Ireland, 21-5556
and Prince of Orange, 21-5628
and Sir John Cochrane, 11-2813
and William of Orange, 14-3547
as child, 4-1038; 7-1856
character in "Henry Esmond," 13-3309
incidents in reign of, 4-1043
- James III.**, king of England: see Pretender, the old
- James I.**, king of Scotland, life of, 1-257; 3-774; 12-3138, 3140; 14-3662
- James II.**, king of Scots, accidentally killed, 12-3137, 3140
- James III.**, king of Scots, murdered, 12-3137, 3140
- James IV.**, king of Scotland, and printers, 14-3612
incidents in reign of, 4-856, 860, 12-3139-40
- James V.**, king of Scotland, and Hôtel Cluny, 21-5540
reign of, 4-860; 12-3140
- James VI.**, king of Scotland, was James I of England, 4-860; 12-3140, 3142
see also James I, king of England
- James, George Wharton**, comment on pikl, 14-3628
- James, Professor**, student of the mind, 18-4875
- James River**, settlement on, 2-522
- Jamestown, Va.**, glass workers in, 5-1264
iron-making at, 22-5688
settlement of, 2-282, 522; 4-1035; 23-5958; 24-6275
- Jam-jar**, how to draw, 6-1471
- "Jane Eyre"**, by Brontë, 10-2625-26
- Janicula**, character in "Canterbury Tales," 2-49
- Janissaries**, in Serbia, 13-3242
- Turkish slave troops**, 12-3192, 3194
- January**, birthstone, 24-6377
name of, 17-4531
- Janus**, Roman god, 17-4531
- Japan**, and gunpowder, 5-1164
and school republic, 24-6390
animals of, 3-802
artificial leather of, 11-2834
baseball in, 20-5247
birds of, 6-1566
children in, 4-923
costume of, 13-3439
crabs of, 10-2614
exhibit of art, 20-5399
fisheries of, 15-3811
food of, 11-2732
in Hawaii, 8-2150
milk in, 11-2830
opening of, 13-3492
peace with Russia, 9-2380
sandals in, 12-3106
scene in, 2-353
tea in, 23-5971, 5976
water-supply of, 21-5416
- Japanese**, and Canada, 22-5942, 5946
use chop-sticks, 18-4801
who saved the cherry-tree, 22-5775
- Jaqes**, Shakespearean character, 3-637
- Jar**, for cooling water, 23-6102
Kwang and boy in, 21-5478
- Jardin d'Acclimatation**, in Paris, 21-5539
- Jardin des Plantes**, in Paris, 21-5536
- Jarley, Mrs.**, character in "Old Curiosity Shop," 11-2111
- Jarnac**, battle of, 2-334
- Jarndyce, John**, character in "Bleak House," 10-2460
- Jarrow**, monastery of, 18-4791
- Jascha**, prince, in story of bird-girl, 7-1872
- Jason**, and the Golden Fleece, 1-203
myth painted, 7-1688
- Jasper**, precious stone, 24-6377, 6379
- Jasper House**, in Canada, 23-6145
- Jaudenes y Nebot, Don Josef**, portrait, by Stuart, 16-4217
- Java**, Dutch in, 14-3546
serpents of, 6-1382
- Java**, ship, 6-1398, 12-3005, 3008
- Java-sparrow**, a weaver-bird, 7-1758, 1761
- Jaw**, and phosphorus, 3-812, 9-2433
development of jaws, 14-3666
fracture and dislocation of, 17-1382-83
movable joints of, 10-2571
muscles liable to spasms, 17-4484
of snake, 6-1387
use of jaws, 6-2077
- Jay, John**, Chief Justice of the United States, 2-398
envoy to England, 6-1396
- Jays**, birds, 9-2213, 2215, 2344; 13-3456
eggs of, 7-face 1756
see also Blue-jay
- Jean Jacques I.**: see Dessalines, General
- Jeanne d'Albret**, queen of Navarre, 2-334
- Jefferson, Thomas**, administration of, 13-3488, 3490
and Capitol, 8-2056; 23-5956
and Declaration of Independence, 11-4468
and Elizabeth Patterson, 19-4945
and Hamilton, 10-2436
and Jerome Bonaparte, 19-4942
and Old Bruton Church, 6-1395
and plough, 11-2711, 2714
and slavery, 8-2042
and third term, 6-1435
and University of Virginia, 17-4569; 23-5957
as president, 3-779, 781-82; 6-1388, 1396; 9-2382; 12-4735
as Secretary of State, 6-1393, 1396
college of, 17-4568
during the Revolution, 4-1003, 1008
home of, 3-781
statue of, 18-4666, 4672
writings of, 4-1002; 6-1436
- Jeffries**, crossed Channel, 22-5810
- Jehan à la Barbe**: see Mandeville, John

GENERAL INDEX

- Jehan de Bourgoynes**: see Mandeville, John
Jehan Gir, Mogul emperor, 7-1716
Jehu, king of Israel, 19-4965
Jellyfish, a marine animal, 4-1068; 6-1420, 1424, 1427; 8-2411; 10-2463
 development of, 14-3665
Jelly-mould, of folded paper, 18-4825
Jena, battle of, 10-2593, 14-3728
 German town, 11-2766
Jenghis Khan, leader of Mongols, 15-3860, 3928
Jenkins, Captain, 7-1821
Jenner (Edward), and vaccination, 10-2474; 11-2801; 18-4625, 4632
Jennival, French poet, 14-3772
Jennie Oughman, ship, in "Captains Courageous," 20-5376
Jenny, orang-utan, 21-5505
Jerboa, an animal, 3-682-83, 808
 home of, 21-5577
Jeremiah, prophet, 24-6332
Jerfalcon, a bird of prey, 7-1900
Jeroboam, king of Israel, 19-4967; 24-6330
Jerome, St., translated the Scriptures, 15-4029-30, 4037
Jerome, named Dead Sea, 22-5815
Jerome, Brother, character in "Cloister and the Hearth," 16-4074
Jerrold, Douglas, anagram of names, 19-5037
Jersey, kind of cattle, 3-406
Jersey, Isle of, 4-1063
 New Jersey named for, 3-529
Jerusalem, bishop of, and the true cross, 20-5381
Jerusalem, king of, 6-1562
Jerusalem, and Babylonians, 19-4969
 and Rome, 19-5041
 and the Crusades, 6-1562; 12-3188, 3190
 history of, 1-127, 2-539; 24-6330
 in "Ben Hur," 20-5257
 temple of, 20-5202
 "Jerusalem," by Lagerlof, 20-5316
Jervis, Admiral, at battle of St. Vincent, 17-4362
Jesse, the Bethlehemite, 24-6284
Jessica, Shakespearean heroine, 2-332
Jester, and kings, 17-4347
 and rope, 8-2145
 escape of kings, 8-2034
Jesuits, and South America, 17-4512
 in Canada, 20-5286
 missionaries to American Indians, 1-21; 2-278, 3-558; 4-894; 11-2784
 society of, 4-894; 15-4038, 22-5933
 see also Jesus, Society of
Jesus Christ, and children, 4-923
 and Rose of Jericho, 7-1705
 birth of, 20-5280
 character in "Ben Hur," 20-5261
 followers in India, 7-1714
 holy places of, 6-1549-50
 in Palestine, 15-3856
 language spoken by, 5-1287
 mother of, 11-2793
 opinion of, 16-4168
 pictures depicting, 8-760
Jesus, Society of, and Fordham University, 17-4572
 see also Jesuits
Jew-birds, build community nests, 9-2343
Jewel-chamber, in Mammoth Cave, 5-1306
Jewels, English state, 8-1254
 fowl and the jewel, 3-580
 in Italy, 12-3086
 jewel of Alfred the Great, 2-470
 prehistoric, 1-208
 Tower of, San Francisco Exposition, 1-84
 see also Cornelia, Diamond of Alfred, Isabella
Jewel-Tower: see Tower of London
Jewel-weed: see Touch-me-not
Jewett, Sarah O., American writer, 8-2101
Jews, King of the, character in "Ben Hur," 20-5259
Jews, and Assyria and Babylonians, 19-4965, 4969
 and Cyrus the Great, 20-5146, 5163
 and Inquisition, 13-2844
 and Romans, 20-5282
 and St. Bernard, 15-4082
 built Colosseum, 22-5928
 do not eat pig, 2-414
 history, 1-127
 in Canada, 22-5946
 Jew and slave, 20-5184
 persecution of, 15-3806
 sang hymns, 8-2018
 see also Hebrews, Israelites
Jiddah, port of Mecca, 15-3858
Jigger, an injurious insect, 12-3203
Jigger-mast, of ship, 15-3960
Jiloker: see Stock
Jimson-weed: see Thorn-apple
Jingle, character in "Pickwick Papers," 10-245
Jingling, a game, 19-5035
Jip, dog, in "David Copperfield," 11-2863
Jo, character in "Little Women," 8-2098-99; 20-5169
Joachim, Order of St., 10-2622
Joachim, Joseph, violinist, 24-6386
Joan, Countess of Montford, 10-2608
Joan, married Llewelyn, 20-5386
Joanna, Spanish princess, 13-3342, 14-3544
Joan of Arc, and Rheims, 20-5378
 French patriot, 1-129, 130, 131, 136, 3-771
 statues of, 9-2423
 story of, 8-2072
 "Joan of Arc," by Mark Twain, 6-1621
 "Joan of Arc," moving-picture play, 20-5143
Joao, king of Portugal, and Ceuta, 15-4027
Job, and his donkeys, 23-6066
Job's tears: see Peridot
Joceline, and the little man, 19-1981
Jock Pass, in Switzerland, 22-5817
"Jock", character in "Heart of Midlothian," 12-3131
Jock-by-the-Hedge: see Hedge-garlic
Joconde, Lai: see Mona Lisa
Joe-Pye-Weed, a plant, 20-5213, 5216
Joffre, General, visits New York, 19-5011
Jogues, Father, Jesuit missionary, 4-891
Johanan ben Sakkal, Jewish rabbi, 24-6331
Johansen, Lieut., arctic explorer, 21-5160
John, St., apostle, settled at Ephesus, 9-2337
 statue, by Donatello, 11-2796
John, character in "Rob Roy," 6-1623
John, of Austria, at battle of Lepanto, 12-319
John, prince of Rheland, 18-4662
John, Prince, of Portugal and Brazil, 20-5370
John, king of England, and Celert, 20-5385
 and Gotham meadow, 18-4126
 and Innocent III, 19-5098
 and Magna Carta, 18-4797
 and Robin Hood, 10-2629
 character in "Ivanhoe," 7-1666
 Injured Richard I, 8-2019
 killed at Crécy, 11-2902
 luckless, 12-3138
 reign of, 3-588, 594
John, king of France, luckless, 12-3138
John, king of Scotland: see Robert III, king of Scotland
John XXIII, pope of Rome, and Vatican, 19-510
John Balliol, king of Scotland, luckless, 12-313
 "John Brown's Body," song, 12-3053
John Bull, origin of nickname, 9-2351-53
John Bull, The, an engine, 3-605
John Carruthers Hall: see Queen's University
John Chinaman, made of cork, 2-486
John Damascene, St., hymn of, 8-2013
John-de-Acre, Sir, character in "Ivanhoe," 7-1661
John, Faithful, 18-1677
 "John Gilpin," by Cowper, 23-6031
 "John Halifax, Gentleman," by Mulock, 10-2627, 15-3989
John Lackland: see John, king of England
John of Gaunt, and Westminster, 18-4684
 and Wycliffe, 15-3940
 daughter of, 15-4027
Johns Hopkins Hospital, ward in, 18-4627
Johns Hopkins University, at Baltimore, 17-1071
Johnson, Andrew, administration of, 13-3488, 3493
 as president, 8-2057, 9-2382
 born in North Carolina, 9-2382
 impeachment of, 6-1438; 8-2057
Johnson, B. Pauline, poems: see Poetry Index
Johnson, Eastman, American painter, 18-4220
Johnson, Dr. Samuel, comments of, 4-898, 7-1752, 18-1155-57; 23-6030
 English author, 10-2619; 18-4726, 4729
Johnson, Sir William, and Indians, 4-894
Johnston, Albert Sidney, and West Point, 18-4735
 Confederate general, 8-2047
Johnston, Sir Harry, English traveler, 3-626, 4-1016
Johnston, Joseph E., and West Point, 18-173
 Confederate general, 8-2045, 2048, 2052-51
Johnston, Mary, American writer, 8-2101
Johnston Island, American, 8-2147
John the Baptist, Donatello's statue of, 8-1172

GENERAL INDEX

John, the Coward, 8-2070
 see also John, king of England
Joigny, Count de, and Vincent de Paul, 12-3069
Joints, ball-and-socket, 10-2373
 in carpentry, 5-1359, 6-1520
 of engines, 10-2465
 of skeletons, 10-2465
 see also Limbs, Skull, etc.
Joliet, Louis, explored America, 2-278; 22-5825;
 22-6112, 6117
"Jolly Beggars," by Burns, 23-6032
Jolly Tapley Inn, in "Martin Chuzzlewit,"
 10-2675
Jonah-crabs see Crab
Jonathan, and David, 24-6284
 child of, 22-5915
Jones, Sir Charles, and Goody Two Shoes, 20-5180
Jones, Inigo, English architect, 5-1172
Jones, J. W., and disc records, 21-5603
Jones, John Paul, American naval commander,
 4-1006; 12-3003-08
 and flag, 21-5492
 body of, 13-4741
Jonquil, a plant, 20-5230
Jonson, Ben, friends of, 21-5488-89
 on Spenser, 21-5186
 poems, see Poetry Index
Joppa, Dorcas at, 17-1150
Jordan River, in Palestine, 15-3856
Jorullo, a volcano, 17-1101
José, character in "Captains Courageous,"
 20-5375
José, Francis, Paraguayan dictator, 18-1610
Joseph, in Egypt, 18-1648
 the Jewish slave, 11-2938-39; 24-6330
Joseph, as Holy Roman Emperor, 17-1553
 as emperor of Austria, 5-1150, 9-2289 10-2591
 as emperor of Germany, 14-3728
 death of, 10-2561
"Joseph Andrews," by Fielding, 7-1750
Joséphine, empress of France, 2-360, 9-2288;
 17-4360, 1368, 21-5535, 5537
Joseph of Arimathea, character in "Table
 Round," 4-885
Joseph, of the Stadium, St., hymn of, 8-2013-14
Josephus, and virtues of stones, 24-6377
Joshua, Jewish general, 24-6330
Joshiah, king of Israel, 24-6322
Jostedal Glacier, in Norway, 14-3619
Jouffroy, Marquis de, steamboat of, 10-2184
Joule, and heat-work, 17-1390
Jourdan (Jean B.), French marshal, 17-1166
"Journalists," by Greytak, 13-3399
"Journal to Stella," by Swift, 7-1748
Jove, bolts of, 12-3117
Joy, picture of Lear and Cordelia, 3-611
Joy, George W., painting of boy Nelson, 17-1361
Joyce, Cornet, in charge of Charles I., 7-1859
Joyce, Muriel, character in "John Halifax,"
 15-3971
Joy, Island of, in "Paeic Queen," 3-700
Juan, Prince, in story, 3-579, 581
Juan Fernandez, island of, 24-6226
Juarez, president of Mexico, 17-4402
Jubilee-singers, songs of, 12-3054
Judah, kingdom of, 22-5788; 24-6330
Judas Maccabeus, Jewish general, 24-6332
 Jewish hero, 1-127
Judges, appointment of United States, 6-1436
 colonial, 4-395
 Supreme Court, 6-1437
Judgment Tree, of Boone, 24-6251
"Judith," by Hebbel, 13-3399
Juggernaut, Hindoo god, 6-1636
Julia, Shakespearean character, 3-639
Juliana, Princess, heir to throne of Netherlands,
 14-3518
Julian, the Apostate, emperor of Rome, 12-3187,
 20-5155
Julier Pass, across Alps, 12-2984
Juliet, character in "Romeo and Juliet," 2-117,
 3-561, 21-5585
Julius II, pope of Rome, work for, 19-5100, 5102,
 5104
Julius Caesar: see Caesar, Julius C.
"Julius Caesar," by Shakespeare, 20-5280,
 21-5588
July, birthstone for, 24-6377
 name of, 17-4534-35
Jumbies, almond, 13-3328
Jumbo, story of the elephant, 2-292
Junel Mansion, in New York, 19-5014
Jump, when shocked, 11-2910
Junper, a dog, 20-5180
Jumping-bean, history of, 10-2475

"Jumping Frog," by Mark Twain, 6-1620
Junco, a bird, 13-3461
June, birthstone, 24-6377
 name of, 17-4534
June-berry, a tree, 20-5342
June-bug, injurious insect, 12-3303
Jungfrau, Mt., Alpine peak, 12-2981-82, 2985;
 22-5812, 5845-46
Jungle Demon: see Mowgli
Jungle-folk, in story of Mowgli, 21-5468
Junius, Roman family, 17-4534
Junius, Lucius: see Brutus
Juno, goddess, and Callisto, 13-3374
 and garden of Hesperides, 20-5186
 and golden apple, 7-1710
 and June, 17-4534
 and peacock, 15-4056
 temple of, 3-576
Juno, character in "Masterman Ready," 8-2025
Juntas, South American, 20-5361, 5364
Jupiter, god, and Ams, 13-3370
 and Callisto, 13-3374
 and frogs, 2-503
 and oak, 18-4866
 bolts of, 12-3117
 et Pane, 21-5532
 father or king of gods, 7-1710, 17-1584
 Hercules, son of, 13-3374
 see also Jove
"Jupiter," by Mozart, 13-3290
Jupiter, planet, affected comet, 10-2544
 and comets, 12-3119
 and solar system, 8-1963-64 13-3508
 changes in, 23-5991
 heat of, 16-4312
 light of, 13-3384
 moons of, 1-145, 118; 8-1963
 name of, 9-2249
 planets revolving around, 7-1680
 story of, 1-110, 144, 6-1413, 7-1680, 8-2090;
 9-2384-90, 2392-94
 tides on, 9-2294
Jupiter Ammon, a god, 18-4852
Jura Mountains, in Europe, 9-2416, 12-2982
Jury, in "Pilgrim's Progress," 5-1183
 trials by, 6-1438
Justice, fresco of, 7-1686
Justinian the Great, emperor of Rome, and
 Narses, 11-2939-41
 as emperor of Rome, 12-3187-89
 obtained silkworm eggs, 7-1829
Jute, for paper, 4-943
Jutes, in England, 2-465; 17-1370
 religion of, 14-3652
Jutland, peninsula of, 14-3652
Jutta, and Richard of Cornwall, 23-6191
Jutta's Book, castle of, 23-6191

K

Kaa, the Great Snake, 21-5471
Kaaba, temple at Mecca, 12-3029; 15-3858
Kabul, capital of Afghanistan, 15-3927, 3932
Kafir Corn, in Texas, 23-5968
Kafir, dig gold, 20-5323
 Kafir and the lion, 22-5685
 kill hornbills, 7-1759
 natives of South Africa, 7-1780
 stories told to children of, 21-5481
Kaif, caliph of Bagdad, and Seljouks, 15-3860
Kak, hard biscuits, 23-6102
Kaka, a parrot, 7-1759
Kakabeka Falls, in Canada, 23-6118
Kakapo, a bird, 6-1509, 1510
Kalakauna, king of Hawaii, 8-2150
Kaleidoscope, making a, 2-385, 23-6082
Kalgoorlie, in Australia, 6-1374
Kalmuoks, costumes of, 15-3931
Kamchatka, exploration of, 14-3726
Kamerns, German colony, 11-2771
Kaministiquia, river in Canada, 23-6118
Kanakas, Sandwich Islanders, 24-6237
Kanaris, Constantine, Greek patriot, 13-3239
Kandahar, Lord Roberts and, 15-3925, 3927,
 3932
Kane, Dr. Elisha, arctic explorer, 21-5458
Kang, who found light, 21-5478
Kangaroo, a mammal, 3-671; 4-874, 877; 6-1376;
 21-5663
 skins for leather, 11-2834
Kangaroo-rat: see Jerboa, Kangaroo
Kansas, admission of, 7-1848; 13-3492
 and Coronado, 2-276
 flower of, 22-5815

GENERAL INDEX

- Kansas**, history, 8-2043, 13-3492; 22-5713
oil in, 16-4166
wheat in, 9-2386
Kansas City, Mo., station in, 22-5712
Kansas-Nebraska Bill, history, 3-786. 8-2013;
10-2441, 2443
Kant, Emmanuel, German philosopher, 11-2841;
16-4259
Kaoilin, for pottery, 17-4539
in Brazil, 20-5371
in France, 9-2430
Kapiolani, Princess, and Pe-le, 20-5283
Kapteyn, Professor, German astronomer,
11-2740; 17-4482
Karachi, port of India, 6-1634
Karakorum, mountains in Asia, 18-3924
Kara Mustafa, Turkish general, 10-2559
Karlsefni, Thorinn, colony in America, 2-271
Karnak, temple at, 18-1840, 4848-49, 4851;
18-5042
Karnak, Hall of, in Mammoth Cave, 5-1309
Kashgar, Asiatic town, 15-3928, 3933
Kashkash, mission at, 23-6113
Kassandane, Queen, character in "Egyptian
Princesses," 23-5953
Kate, character in "Cioister and the Hearth,"
16-4072
Kate Barless, of the Broken Arm, 1-257; 12-3110
Katharina, Shakespearean character, 3-613
Katherine, queen of England, 3-774
"Kathie of Heilbronn", by Kleist, 13-3396
"Kathleen Mavourneen", song, 14-3771
Katie, death of, 17-4552
Kaukai, mountains in Norway, 14-3659
Kauri-trees, in New Zealand, 6-1483
Kay, Sir, character in "Table Round," 4-881
Keyward, the Hare, 21-5569
Kazan, Cathedral of, in Petrograd, 15-3800
Kazan Pass, 21-5658
Kes, a bird, 7-1759, 1761
Keatney, General, during Mexican War, 7-1844
Keats, ship, 8-2049
Keats, John, English poet, 14-3524; 23-6036
poems: see Poetry Index
Keble, John, hymns of, 8-2017-18
poems: see Poetry Index
Keble College, name of, 8-2018
Keel, of boat, 15-3883, 5886, 18-4618
of pea-flower, 16-4135
Keeler, Professor J. E., astronomer, 11-2842
Keelson, of a boat, 18-4618
Keops, Norman, 3-589
Keowatin, district of, 5-1290-81
Keller, Helen, blind American writer, 8-2103,
12-3124
poems: see Poetry Index
Kelvin (William T.), an English scientist,
6-1587; 8-2161; 17-4392
and heat, 17-4502-04
and telegraphy, 17-4445-16
and vortex-rings, 13-3127
type of mind of, 19-4999
Kemp-Welch, Lucy, her pictures of horses,
23-6064, 6067, 6069
Kemys, Captain, and Raleigh, 21-5413
Ken, Bishop (Thomas), hymns of, 8-2017-18
Kenepquoshes, Cree Indian, 10-2577
Kenia, mountain of Africa, 16-4399
"Kenilworth", by Scott, 6-1496; 15-3881
Kenilworth Castle, in Europe, 6-1496
masque at, 21-5580
Kennebec River, settlement on, 2-522
Kennedy, Frank, character in "Guy Mannering,"
6-1626
Kennel, for a dog, 19-5127
Kenneth, king of Scotland, 2-470
Kenneth McAlpin, king of Scotland, 12-3133
Kenneth, Sir, in "The Talsman," 6-1196
Kensico Reservoir, for New York's water-
supply, 20-5193
Kensington Gardens, in London, 19-5040
Kensington Palace, in London, 5-1117
Kent, Duke of, Prince Edward Island named for,
3-758
Kent, Earl of, Shakespearean character, 3-641
Kent, Eng., hazel-nuts of, 8-2001
history of, 1-210; 2-465-66; 3-772
Kentucky, admission of, 7-1832; 13-1489
and Boone, 24-6250
and flag, 21-5498
during Civil War, 3-2044, 2046-47
flower of, 22-5815
hemp in, 15-4003
history of, 23-5957
limestone of, 10-2882
Kentucky, Mammoth Cave in, 5-1305
oil in, 16-4166
Kentucky Cliffs, in Mammoth Cave, 5-1308
Kentucky-warbler, 9-2346
Kenwigs, characters in "Nicholas Nickleby,"
10-2671
Keokuk, Iowa, dam at, 23-6070
Kepler (Johann), and astrology, 8-1960
and planets, 9-2391
German astronomer, 5-1196; 7-1675, 1678
saw Halley's comet, 10-2543
three laws of, 7-1678; 14-3587
Kernel, 22-5874
see also Seed
Kerosene, and fires, 22-5762
and petroleum, 10-2680
for lamps, 3-669
how we get, 16-4165
light burns up in, 16-4110
Kertland, Philip, Welsh shoemaker, 12-3102
Kestrel, a little hawk, 7-1900-01
egg of, 7-face 1760
Ketch, a boat, 15-3959-60
Ketcham, Annie G., and "Bonnie Blue Flag,"
12-3054
Kethe, William, reputed author of hymn,
8-2013
Ketten-Brücke, bridge over Danube, 11-2899
Kettle, for sugar-making, 3-708
heat of, 14-3572
liquid air and, 16-4083
marble in a, 11-2910
why does it sing, 4-913
Kettledrummle, Gabriel, character in "Old
Mortality," 7-1778
Kevin, St., Irish hermit, 21-5555
Key, Francis S., and "Star-Spangled Banner,"
6-1399; 12-3052, 17-4465, 4468; 21-5494
poems: see Poetry Index
statue of, 18-1666
Key, and lock, 24-6357, 6359, 6362
Franklin's, 8-2161
in shape of life-symbol, 21-5426
of maple, 10-2500
of musical instrument, 5-1088, 1092-94
of telegraph instrument, 14-3575
photographed by X-rays, 24-6370
see also Seeds
Keyboard, of piano, 13-3469
see also Key, of musical instrument
Keystone, of arch, 3-610
Key West, sponge-fishing of, 16-4265
Kha-fu, king of Egypt, 18-4846-47
Khaibar Pass, importance of, 15-3932
Khaki, reason for, 13-3445
Khan, ruler of Tartars, 14-3723
Khartoum, Egyptian town, 16-4306
Rhodie, and gates of Assuan, 21-5426
ruler of Egypt, 16-4304
Cheops, pyramid of, 18-1843
see also Khu-fu
Kherson, Russian town, 14-3728
Khotan, Asiatic town, 15-3933
Khu-fu, king of Egypt, pyramids of, 18-4846;
19-5010
see also Cheops, Khops, pyramids of
Khyber Pass, from India, 6-1630
Kicking Horse, a mountain-pass, 22-5778, 5782
railway in, 9-2276
Kicks: see Football
Kid, skin for gloves, 12-3105
wolf and the, 9-2179; 11-2963
Kidd, Captain (William), pirate, 2-533
"Kidnapped", by Stevenson, 9-2329
Kidneys, work of, 6-1597-98; 23-6014
Kiel, headquarters of German navy, 11-2764
Kiel Canal, in Germany, 11-2764; 14-3658; 15-3798
Kier, Samuel M., and oil, 16-4166
and petroleum, 16-4166
sold carbon-oil, 3-669
Kiev, Russian town, 14-3722-23; 15-3796, 3799,
3803
Kiki-Tsum, and the looking-glass, 20-5182
Kilauea, Mount, Hawaiian volcano, 8-2148;
20-5283
Kilcolman, estate of Spenser, 21-5486
Kilimanjaro, mountain of Africa, 16-4299
Kilenny, Statue of, and Ireland, 21-5554
Killarney Lakes, in Ireland, 21-5553
Killdeer, a bird, 9-2342
Kill-Devil Hill, North Carolina, Wrights at,
1-175
Miller: see Grampus
Killigrew, Thomas, portrait, by Van Dyck,
17-4595

GENERAL INDEX

- Kila**, for baking china, 17-1511-43
for cement, 24-6351
for salt, 1-212
rotary, 1-238
- Kinchinunga**, Mount, in Himalayas, 15-3922
- Kind**, a shepherd, 4-1048
- Kinemascope**, moving-picture process, 20-5140
- Kinematograph**, moving picture, 13-3427
- Kinetoscope**, invention of, 20-5136, 5140
- King**, Edward, and Milton, 22-5674
- King**, Grace, American writer, 8-2102
- King**, Mrs. Harriet E., poems; see Poetry Index
- King**, cruelty of ancient kings, 19-5024
gallant deed of boy, 13-3296
of Kameta, 6-1525
of the golden mines, 4-1032
the nobleman and the peasant, 14-3711
the two kings, 22-5686
who could not sleep, 21-5476
who divided his goods, 10-2668
- Kingbird**, nest of, 22-5752
usefulness of, 9-2311; 13-3457
- "King Christian Stood Beside the Mast,"** Danish national song, 14-3772
- Kingcup**; see Maish-marigold
- King Edward VI Grammar School**, Birmingham, 5-1260
- "Kinges Quhair,"** of James I, 12-3110
- Kingfisher**, a bird, 7-face 1752, 1759, 1763, 13-3156, 22-5741
egg of, 7-face 1760
nest of, 22-5752
- King George's War**, in America, 4-895
- "King Henry IV,"** by Shakespeare, 21-5587
- "King John,"** by Shakespeare, 21-5587
- King John's Castle**, in Limerick, 21-5559
- "King Lear,"** by Shakespeare, 3-6111, 16-1247; 21-5588, 5590
- Kinglets**, small birds, 13-3463
- King of Bells**, in Moscow, 15-3902
- King-of-the-Castle**, a game, 5-1113; 19-5121
- "King of the Golden River,"** by Ruskin, 6-1449, 1482, 1527
- "King Ottokar,"** by Gillipuzer, 13-3388
- King Philip**, Indian chief, 4-894
- King Philip's War**, Indians during, 23-6116-17
- King Pym**; see Pym, John
- King's Birthday**, in Canada, 17-1163
- King's Chapel**, in Boston, 20-5349
- King's Chapel Burying Ground**, in Boston, 20-5349
- King's College**, Cambridge, founded, 3-576
see also Columbia, New Brunswick, Toronto, universities of
- King Semibreve**, and his court, 8-1919
- King's Guard**, puzzle of, 19-5031
- Kingsley**, Charles, English author, 6-1481; 9-2321, 2328
poems; see Poetry Index
writings of, 9-2328, 14-3713
- Kingsley**, Henry, English author, 9-2329
- King's Library**, in British Museum, 3-776
- King's Mountain**, battle of, 4-1007-08, 7-1831
- King-snake**; see Graits
- Kingsport**, village of, 21-5517
- King's-seat**, of Philip II, 22-5831
- Kingston**, (Canadian city), 1-226; 3-754; 5-1272, 23-6122
- "King's Tragedy,"** by Rossetti, 23-6039
- King-vulture**, a scavenger bird, 7-1898
- King William's Land**, Franklin and, 21-5438
- King William's War**, in America, 4-894
- Kinney**, Coates, poems; see Poetry Index
- Kinnikinnik**, a plant for smoking, 20-5219
see also Heathen
- Kipling**, Rudyard, and Canada, 20-5221
English writer, 20-5373; 23-6040
poems; see Poetry Index
- Kippeltranga**, in "Guy Mannering," 6-1626
- Kirkis**, wandering Asiatic tribes, 15-3924
- Kirke**, Admiral (Sir David), and Canada, 3-558
- Kirkey**, Abbeys, and Robin Hood, 10-2633
- Kiss**, by Rodin, 16-4174
- Kissinger**, John, and yellow fever, 12-3237
- Kit**, character in "Old Curiosity Shop," 11-2773
- Kitsata**, Japanese scientist, 24-6368
- Kitchen**, of Payne's house, 12-3048
see also Jack, house of
- Kitchener**, General (Horatio H.), at Omdurman, 16-4266
- Kitchomakin**, wigwam of, 23-6115
- Kite**, and bridge-building, 1-24
and wireless, 17-4448
Franklin's, 8-2164
how to make, 6-1516
- Kite**, in the air, 22-5870
strudy at height, 22-5814
what makes it fly, 4-319
see also Box-kite
- Kites**, birds, 3-808, 7-1893, 1898-99; 9-2342
- Kitten**, hungry fox and the, 6-1525
out of drawing, 19-4925
- Kittiwake**, a gull, 7-1642-44
- Knaprill**, Ottoman, 12-3194
- Kiwi**, a bird, 6-1376
see also Apteryx
- Klamath Lake Bird Colony**, group from, 20-5333
- Klüber**, General (Jean B.), in Egypt, 16-1304
- Kleist**, Heinrich von, German writer, 13-3396
- Klondike**, gold in the, 6-1457, 8-1916, 2148; 15-1058, 20-5318
- Knareborough**, Eng., 8-2065
- Knee**, of horse, 23-6082
- Knee-cap**, bone of the knee, 10-2571, 2571; 16-1201
see also Patella
- Knee-holly**; see Butcher's broom
- Knee-joint**, of the leg, 10-2571, 2574
- "Knickerbocker Days in New York,"** by Irving, 22-5831
- Knife**, cleaning, 17-4494
edge of, 9-2330
mystery of suspended, 22-5736
of stone, 14-3651
on chariot wheels, 20-5147
problem concerning knives, 5-1365
tale of a, 12-1801, 1802, 1804
- Knight**, Rev. Joseph, wrote music for "Cradle of the Deep," 14-3768
- Knight**, and the glove, 21-5477
and the ugly old woman, 2-498
and the wonderful stone, 11-2759
costume for, 20-5316
device of, 7-1657
horses of, 23-6068
in "Canterbury Tales," 15-3938
night's vigil of, 5-1357
tale told by the, 2-497
see also Robber-Knights, of Germany
- Knights Hospitallers**, 6-1553
- Knights of Columbus**, money raised for, 13-3495
- Knights of St. John**, order of; see Knights Hospitallers
- Knights of the Round Table**; see Arthur, King
- Knights Templars**, in "Ivanhoe," 7-1663
Knight-Templar, a rock, 5-1311
order of, 6-1553
- Kniphofia**, a plant, 20-5237
- Knitting**, description of, 19-4709
- Knockwinnock Castle**, in "Antiquary," 7-1668
- Knots**, for bandages, 15-3963
for buttons, 20-5351
in wood, 20-5177
magic, 5-1218
making French, 23-6166
sailor's, 1-250
see also Hitches
- Knot-stitches**, in drawn-work, 9-2357
- Knowledge**, character in "Pilgrim's Progress," 5-1185
loss of, 11-2804
tree of, 22-5680
- Knowles**, Sheridan, his picture of Good King Wenceslas, 4-922
- Knox**, Henry, Secretary of War, 6-1393
- Knox**, John, and Mary, Queen of Scots, 12-3142
- Knoxville**, city in Tennessee, 23-5962
- Knuckles**, of the hands, 10-2573; 16-1200
- Knutson**, original of Cranford, 10-2623
- Koala**, an animal, 4-876, 23-6025
- Koch** (Robert), German physician, and tuberculosis, 4-909; 24-6366-69
- Kodaks**, invention of, 20-5136
- Kokot**, and the Wandering Jew, 3-800
- Koln**; see Cologne
- Kolossvár**, Hungarian town, 21-5658
- Kong**, African country, 20-5319
- Kooka-burra**, the laughing-jackass, 23-6026
- Koong-shoo**, Chinese story character, 2-359
- Kootenay**, mines at, 23-6094
- Kootenay River**, in Canada, 22-5778
- Koppernik**, Nicolas, astronomer known as Copernicus, 8-1963
- Koran**, on turquoise, 24-6383
recitations of, 23-6105
sacred book of Mohammedans, 12-3027, 23-6182
texts in St. Sophia, 12-3187
- Korea**, animals in, 1-159
telling time in, 6-1541
- Kosovo**, battle of, 12-3190

GENERAL INDEX

Kosovo, under Turks, 13-3247
 Kossuth, Louis, Hungarian patriot, 1-134;
 11-2905; 21-5651, 5654, 5656, 5658
 Kowhai, a flower, 6-1488
 Kraken, imaginary creature, 1-220
 Kramer, Gerhard, and Mercator's projection,
 7-1767
 Kremlin, of Moscow, 15-3802
 Kronstadt, Russian fortress, 14-3726; 15-3798
 Krupp, factory of, 11-2766
 Krypton, gaseous element, 5-1319
 Kublai Khan, and Marco Polo, 1-60
 Guns of, 5-1164
 Kubu-ed-Din, slave-ruler, 11-2940
 Kuhnleborn, a water sprite, 15-4053
 Ku-Klux-Klan, organization of, 5-2057
 Kumquat, a small orange, 3-650
 Kurland, history of, 14-3728
 Kwang, saved boy, 21-5478
 Kwang-Kung, Chinese boy, 21-5479
 Kwen Lun Mountains, in Asia, 15-3923

L

L, of Perseus, 11-2911
 see also Perseus, constellation
 Labat, Mr., saved his son, 7-1741
 "Labor," a painting, 7-1688
 Labor, division of, 4-991; 20-5304
 Labor, United States Department of, 6-1437
 see also Commerce and Labor, United States
 Department of
 Labor-Councils, of Canada, 16-4128
 Labor Day, celebration of, 17-4470
 in America, 17-4463
 Laborde, General, character in "Charles
 O'Malley," 12-2978
 Labor, Federation of, 16-4128
 Labors, of Hercules: see Hercules
 Labor-Unions, of Canada, 16-4127-28
 La Brabançonne, national song of Belgium,
 14-3772
 Labrador, control of, 24-6296
 fisheries of, 24-6293
 history of, 2-271-72, 279; 3-353
 see also Ungava
 Labrador-tea, a shrub, 17-4565
 Laburnum, poisonous European tree, 14-3716
 Labyrinth, of Crete, 20-5200
 Lac, meaning of, 9-2367
 La Cabana, in Havana, 23-6049
 Lace, Cluny, 21-5525
 history of, 21-5525
 in France, 9-2422
 made in St. Thomas, 8-2146
 made in Switzerland, 22-5845-48
 whipping on, 3-621
 Lace-wing, a fly, 12-3191; 13-3301
 Lachine, attacked by Indians, 4-894
 Canadian town, 23-6124
 Lachine Rapids, in St. Lawrence, 3-554-
 23-6124
 Lachish, city of, 19-4965
 Lacombe, Father Albert, story of Father
 Lacombe, 23-6143
 Lacombe, Joseph, voyageur, 23-6143
 Lacroix, Indian name, 1-18; 11-2782
 Lactalbumin, a protein of milk, 17-4585
 Lactarius distans: see Meadow-toadstool
 Lactarius rufus: see Mushrooms, poisonous
 Lactaria, vessels for fat, 9-2367
 Lactose, is milk-sugar, 3-704; 11-2831; 21-5623
 Lady, Sir Hugo de, hero of "The Betrothed,"
 8-1495
 Ladder, animal, 3-670, 674
 for salmon, 10-2700
 in fire-fighting, 22-5758
 Jacob's, 22-5790
 Rapunzel's golden, 9-2319
 "Ladder of Swords," by Parker, 16-4327
 Ladie, character in "Egyptian Princess,"
 23-5951
 Ladies, of the White House, 2-339
 Ladies' tresses, an orchid, 19-5090-91
 Ladislaus, king of Bohemia and Hungary,
 11-2903
 Ladle, for iron and steel, 22-5697, 5699, 5700
 Ladoga, Lake, of Russia, 14-3721
 Ladrone Islands: see Marianna Islands
 Lady, genteel, 10-2591
 Lady-bird, an insect, 9-2334
 usefulness of, 13-3297, 3299, 3302
 "Lady Clara Vere de Vere," by Tennyson,
 23-6036
 Lady-crab: see Crab
 "Lady of Lyons," by Lytton, 9-2324
 "Lady of Shalott," by Tennyson, 23-6036
 "Lady of the Lake," by Scott, 9-2323; 13-3508
 Lady's-mantle, the alpine, 16-4133
 Lady's slippers, various plants, 11-2876, 2886,
 12-4759
 Lady's smock: see Cuckoo-flower
 Lady with the Lamp: see Nightingale, Florence
 Lae, who became a child, 22-6028
 Laertes, Shakespearian character, 2-450
 La Farge, John, American artist, 16-4221, 4258
 Lafayette, Marquis de (Marie J. F. M. G. M.),
 during American Revolution, 4-1004-05,
 1008, 16-4100
 during French Revolution, 9-2282; 16-4100-02
 knew Elizabeth Patterson, 19-4945
 portrait, 4-947
 statue of, 18-4672; 21-5535
 Lafontaine, Jean de, poems: see Poetry Index
 Lafontaine, Miss, married Laurier, 16-4324
 Lagerlof, Selma, writer, 20-5316
 Lake Champlain, battle of, 12-3005, 3010
 Lake-district, of England, 13-3295
 Lake-dwelling, prehistoric, 3-606, 10-2548
 Swiss, 12-2984
 Lake Erie, battle of, 3-759, 6-1898; 12-3008
 Lake-herring: see Chisco
 Lakes, and Peruvian, 17-1508
 caused by glaciers, 1-11
 fish of, 10-2699
 Land of a Thousand, 14-3721
 of Australia, 6-1311
 of North America, 12-3032
 picture of lake, 2-131
 what a lake is, 8-2118
 Lakes, colors, 10-2696
 Lake St. John, Indians about, 11-3783
 Lake Washington, in Washington, 22-5717
 Lake Washington Canal, at Seattle, 10-2688,
 22-5717
 "L'Allegro," by Milton, 22-5674
 La Mancha, district of, 13-3344
 Lamar River, in Yellowstone Park, 3-547
 Lamb, Charles, English writer, 18-1723, 4731,
 4733
 poems: see Poetry Index
 Lamb, Mary, English writer, 18-4731, 4733;
 21-5486
 poems: see Poetry Index
 Lamb, and wolf, 7-1809
 attacks on, 7-1642, 1900-02
 play of, 21-3665
 Lambert, Colonel, character in "The Vir-
 ginians," 13-3122
 Lambert, Rester, character in "The Virginians,"
 13-3122
 Lambert, Theo, character in "The Virginians,"
 13-3122
 Lambkill, a shrub, 17-4558
 Lamb, Persian: see Persian-lamb
 Lame Horse, a statue, 18-4674
 Lammergeier, a vulture, 7-1895, 1897
 Lamp, ancient, 3-669
 cannot equal glow-worm, 5-1191
 electric, 3-668, 23-5991
 Galileo and the swinging, 14-3589
 light of, 20-5292
 lighthouse, 3-664, 668
 of folded paper, 18-1825
 putting out fire from, 12-3113
 suggested pendulum, 7-1878
 wonderful, of Aladdin, 1-89
 see also Nightingale, Florence
 Lamp-black, from crude oil, 18-4169
 "Lampighter," by Cummins, 8-2098
 Lampreys, development of, 14-3666
 Lamprina, golden, 12-lace 3194
 Lancashire, English county, 8-1116; 9-2350
 Lancaster, House of, in Wars of the Roses,
 3-775-76
 Lancaster Prison, Margaret Fell in, 22-5936
 Lancelets, development of, 14-3665
 Lancelot, of the Lake, character in "Table
 Round," 4-883-84; 8-1199; 8-1989; 13-3371
 Land, Ned, character in "Twenty Thousand
 Leagues," 19-5050
 Land, distribution of, 12-3032
 improved by earthworms, 13-3297
 Irish laws of, 21-5551
 needed by life, 3-571
 public, of Canada, 22-5911
 public, of United States, 6-1437
 reclaimed, 9-2384
 see also Barren-lands

GENERAL INDEX

- Land-birds, of Canada: see Canada, birds of
Land-crabs, habits of, 10-2611-12
Lander, Richard, explored Africa, 2-300
Landes, of France, 9-2124
Landing of Columbus, pictures of, 1-58, 7-1686
Landing of the Pilgrims, day for celebrating, 17-1463
"Landlady's Daughter," by Uhland, 13-3396
Land of Five Rivers: see Punjab
Land of Flowers: see Florida
"Land of Grass," in Asia, 15-3926, 3928
Land of the Sky, 23-5958
see also North Carolina
Lander, Walter Savage, poems: see Poetry Index
"Land o' the Leal," song, 14-3770
Landrill, egg of, 7-face 1760
Landschelding, a dyke, 14-3593
Landseer, Sir Edwin, English artist, and Honrs, 5-1262; 19-6040
paintings of, 2-101, 506, 23-6069; 24-6323, 6327
Land's End, little pikes of, 7-1812
Landwehr, of German army, 11-2761
Lane, Franklin K., makers of the flag, 21-5190
Lane, Ralph, and colony, 24-6271
Lanfranc, archbishop of Canterbury, 18-1791
Lanfranchi, of Milan, Italian physician, 18-1630
Lang, Andrew, comment on Bayly, 14-4769
Lang, Herbert, American naturalist, 4-1016
Langdon, Marie B., heroism in snowstorm, 11-2815
Langland, William, and Piers Plowman, 15-3941
Langley, Sir Frederick, in the "Black Dwarf," 8-1137
Langley, Professor L. F., and flying-machines, 1-174, 11-2718
Langley, Walter, picture by, 13-3383
Langley, William: see Langland, William
Langton, Stephen, archbishop of Canterbury, 18-1796-97
Language, Aramaic, 5-1287
Latin, universal, 12-3231
liquid, 16-1097
meaning of, 8-2173
of Jesus, 5-1287
of the world, 17-4183
Semitic, 5-1287
why are there so many languages? 5-1286
why do languages change? 5-1286
Language-stocks, of American Indians, 1-16
Languedoc, history of, 11-2516
Lanner, a falcon, 7-1900
Lansdowne, Lord, and Arnold, 23-6099
Lansdowne, Marquess of, governor of Canada, 5-1281
Lantern, flashes time, 6-1539
hanging, 9-2360
of church, 13-3315
of lighthouse, 3-face 749, 750
see also Dicky-show-a-light, Magic-lantern, Winter-cherry
Lantern-fly, an insect, 12-3194
"Laocoon," by Lessing, 13-3391
Laocoon, statue of, 16-4178; 22-5933
Leon, tower at, 20-5393
Leo-Tsze, founder of religion, 12-3023, 3026
La Paz, chief city of Bolivia, 18-1606
Lapis-lazuli, precious stone, 24-6377-78, 6383
Laplace (Marquis Pierre S. de), French astronomer, 11-2844, 17-1502
Lapland, animals of, 2-295, 412, 3-805
history of, 14-3652, 3661
life of people, 21-5461
La Plata, Spanish province of, 18-1606
vicereignty of, 20-5361
La Plata River, in South America, 18-1609
Lapo, a builder of Florence, 11-2798
Lapper, a machine, 19-4888
Lappet-moth, mimicry of, 13-3152
Lapps, and Germans, 14-3652
Lapps, flying islands, in "Gulliver's Travels," 6-1338
Lapwing, egg of, 7-face 1760
Larboard, of ship, 19-4619
Larch, European, 14-3748
"Larchmont," a ship, 8-1954
Larcom, Lucy, American poet, 12-3102
Larg, Lord Mayor, and Caxton, 14-3610
Large, battle of, 12-3136
Lark, a bird, 9-2360, 13-3458
and her young ones, 9-2104
and the merlin, 7-1899
see also Skylark
Larkspur, a flower, 1-249; 3-616, 732, 16-1134; 20-5228
Lars Porsena, king of Etruria, 6-1403
Larva, of insects, 11-2966, 2970
see also Caterpillar, Insects, etc.
Laryngoscope, invention of, 24-6355
Larynx, in the throat, 10-2171; 15-1000; 16-4093
origin of, 15-4000
size of, 19-4879
structure of the, 15-3997, 4001
use of, 7-1619-50, 24-6307, 6353-54
La Salle, Robert Cavalier, Sieur de, and Fort Frontenac, 3-559, 754; 4-899
explored America, 2-276, 278; 3-552, 4-891, 896, 22-5825
"Last of Richmond Hill," song, 14-3769
"Last Days of Pompeii," by Lytton, 9-2324
"Last Judgment," painting, by Michael Angelo, 19-5104-05
"Last of the Fathers," see Bernard, St.
"Last of the Mohicans," by Cooper, 1-195; 6-1612
"Last Rose of Summer," song, 14-3770
Last Round-up, statue, 18-4671
Lasts, for shoes, 12-3103, 3109
Last Sign of the Moor, a rock, 13-3311
Last Supper, thirteen at, 5-1289
Lateran, Papal residence, 19-5098
Latham, Hubert, flight of, 1-177, 180
Lather, color of, 9-2251
Lathes, for copying, 11-2718
for guns, 23-6156
for steel, 23-6155
Lathom House, defence of, 18-4711, 4746
Latimer, Hugh, English reformer, 19-5094-96
Latin Kingdom, 6-1553
Latin language, decline of, 12-3188
for flower-names, 16-1277
prevalence of, 13-3182
used for monk's poetry, 2-477
why we learn, 12-3231
Latin Quarter, in Paris, 21-5535
Latins, in Italy, 10-2666; 20-5271-72
Latinus, king of Latium, 1-78; 20-5272
Latitude, what it is, 7-1766
Latium, legendary country, 1-78; 20-5272
La Tribune, a ship, 14-3694
Lattice-masts, of battleships, 23-6209
Lattice-work, Arabian, 23-6105
of Cairo, 16-4403
Lauferhorn, a mountain, 22-5846
Laud, William, and Hooker, 23-6111
archbishop of Canterbury, 7-1883, 1865-66
Laudnum Bunches, a dance, 11-2905, 13-4322
"Laughing Cavalier," picture, by Hals, 17-1591, 1595
Laughing-gas, discovered, 5-1216
what it is, 4-956, 7-1691
Laughing-gull, a bird, 9-2310
Laughing-jackass, a bird, 6-1376, 7-1759, 1763, 22-749, 23-5826
Laughter, and the grasp, 20-5176
reflex action, 18-4813-14
when glad, 2-390
when self-tickled, 17-4488
you mustn't laugh, 10-2591
Laure, and Petrarch, 20-5310
"Laureate of the Empire," see Kipling, Rudyard
Laurel, leaves of, 6-1472
trimming of, 5-1363
wreath for Josephine, 9-2288
see also Mountain-laurel, Rhododendron
Laurence, Friar, character in "Romeo and Juliet," 2-418
Laurence, Mr., character in "Little Women," 20-5169
Laurent, Mdlle., married Pasteur, 24-6361
Laurentians, chain of mountains, 23-6122, 6124
Laurie, character in "Little Women," 20-5169
Laurier, Sir Wilfrid, premier of Canada, 8-1281, 6-1455; 16-4324-25
Lauterbrunnen, Swiss town and valley, 22-5844-45
Lava, and Hieraculum, 21-frontis.
in western United States, 1-13
melted rock, 4-1086; 13-3251
Laval University, in Canada, 1-224; 20-5296, 5299; 21-5402
Lavardens, Countess of, character in "Abbé Constantin," 18-4752
Lavender, Dr., character of Mrs. Deland, 8-2102
Lavender, flowers, 6-1519
Lavender-bottle, how to make, 8-1941
La Vengeance, ship, 12-3006
Lavoisier (Antoine Laurent), French chemist, 8-1318; 17-4502
Law-courts, of London, 5-1255

GENERAL INDEX

- Lawes (Henry)**, musician, 22-5671
Law-givers, of India, 7-1714
Lawn-grass, has flowers, 8-2085
Lawn-tennis, right way to play, 17-1376-79
Law-papers, stamp tax on, 4-885
Lawrence, St., and Escorial, 22-5850
Lawrence, ran steamboat, 10-2192
Lawrence, Captain James, American naval officer, 6-1398, 12-3008, 19-5016
Lawrence, Sir Thomas, picture of "Child of Long Ago," 1-Frontis.
Lawrence, ship, 12-3008, 3010
Laws, Babylonian, 13-3479
 Champlain's code of, 3-556
 codes of, 13-3479; see also Code commercial, for colonies, 4-994
 of Hammurabi, 19-1962-63
 of Medes and Persians, 20-5148
 of Russia, 14-3722
 of Sparta, 20-5202
 of United States Congress, 6-1437
 painting of the law, 7-1688
 Roman revised, 12-3188
Lawson, explored Australia, 2-365
Lawson, John, torture of, 1-21
Lawyer, anagram from word "lawyers," 19-5037, 5133
 and the oyster, 19-4994
 and the pearls, 11-2893
 in "Canterbury Tales," 15-3939
 tale told by, 2-495
 who lost his fee, 12-3071
Layard, Sir Henry, and lens, 9-2321
 Assyrian researches of, 19-4959, 4961-65
Layers, in eye: see Eye, light in the
 of brain, 14-3688
 of plants, 15-3903
"Lay of the Last Minstrel," by Scott, 9-2321
"Lays of Ancient Rome," by Macaulay, 18-1731, 20-5273
Lazar, Jesse W., and yellow fever, 12-3235-36
Lazuli-bunting, a bird, 9-2445
Lazzaroni, of Naples, 12-3085
Lead, for glass, 5-1261
 from Brazil, 20-5371
 in Australia, 6-1372, 1374
 in Canada, 23-6094
 in Chile, 20-5366
 in diver's boots, 14-3778
 in glass, 5-1261
 in Mexico, 17-4100
 in Newfoundland, 24-6296
 in ocean cables, 18-1698
 origin of, 16-4276
 price of, 18-4814
 production of, 10-2680
 specific gravity of, 15-3828
 tax on, 4-996
 weight and mass of, 14-3674
Leader, following, 3-618
Lead-pencils, graphite in, 18-4814
 lead in, is carbon, 4-854, 5-1313
 making, 13-3484
 sharpening a, 23-6163
 writing of, 15-4024
Leaf-butterfly, an insect, 13-3447, 3452
Leaf-insect, the eyed, 12-3194
 mimry of, 13-3445, 3447-50
Leaf-pictures, on wood, 19-5123
Leaf-stalks, flattened, 17-4480
League, Little Mother's, 12-3220
 of baseball players, 20-5247
 of Liberation, against Napoleon, 9-2289
 of Princes, formed by Frederick the Great, 17-4555
 see also Hanseatic League
Leah, Biblical character, 24-6330
Lean, Donald Bean, in "Waverley," 6-1499
Leander, and Hero, 13-3398
Leap-frog, a game, 3-735
Leaping-pole, game of, 14-3642
Leap-year, cause of, 17-1532 *
 what it is, 1-88
Leas, king of Britain, Shakespearian character, 3-641; 16-4096
Leas Edwin, poems: see Poetry Index
Leather, animals that yield, 2-406, 410; 12-3105
 bark used for tanning, 20-5345
 manufacture of, 11-2833
 microbes for tanning, 4-906
 poking on, 6-1298
 production in United States, 10-2686
 see also Parchment, Vellum
"Leatherstocking Tales," written by Cooper, 6-1611
Leaven: see Yeast
Leaves, and light, 16-4260
 breathing of, 1-246; 2-285
 changed color of, 5-1164
 crowns of, 20-5206
 cut by ants and bees, 11-2850, 2857, 2968, 2972
 exposure of, 15-3906
 falling, 2-391
 for borders, 9-2232
 for camera-lenses, 11-2799
 golden, 9-2313, 2398
 how to draw, 3-744; 6-1472
 hurt by plucking, 12-3147
 insect-eating, 8-2077
 merry, 9-2313, 2398
 of aquatic plants, 19-4947
 shape of, 18-1694; 23-6163
 starch made by, 11-2728
 succulent, 20-5211
 trembling, 18-1694
 used with flowers, 3-622
 waterproof, 17-4370
 why do they change color? 5-1164
 see also Leaf-butterfly, Leaf-insect, Plants, carnivorous, etc.
"Leaves of Grass," by Whitman, 6-1619
Lebanon Mountains, in Syria, 15-3856
Leben, sour milk, 23-6102
Leclanché (Georges), and electric battery, 5-1099
Lee, Mr., a colonial gentleman, 4-966
Lee, General Charles, during Revolution, 4-1004
Lee, Richard Henry, and Old Bruton Church, 6-1395
 motion in Congress, 4-1002; 17-4468
Lee, Gen. Robert E., and West Point, 18-4735
 at Lexington, 22-5957
 Confederate general, 8-2045, 2048, 2053-54; 17-4466
 life of, 17-4466
 surrender at Appomattox, 3-787, 789; 8-2056; 13-3192
Lee, Mrs. Robert E., owned Arlington, 23-5959
Lee, Sergeant, and submarine, 22-5857
Leeches, indicate storm, 12-2993
Leeks, cultivation of, 12-2995
 emblem of Wales, 22-5816
Leelinaw, in "Bride of the Forest," 5-1109
Lee's Birthday, celebration of, 17-4463, 4466
Leewenhoeck, Anton van, made microscope, 9-2332
Leaves, Mr., music of, 14-3776
Leeward, a direction, 18-4619
Left-handedness: see Brain, Hands, use of
Legality, character in "Pilgrim's Progress," 5-1126
Legaré, James Matthew, poems: see Poetry Index
Legaspi, town on Luzon, 8-2153
"Legend of Montrose," story of, 6-1497
"Legend of Sleepy Hollow," by Irving, 6-1611
Legends, Indian, 6-1105
 of places and things, 9-2403; 11-2758
Leghorn, Italian sea-port, 12-3086
Leghorns, breed of chickens, 6-1566
Legion, character in "Pilgrim's Progress," 5-1181
Legion of the West, part of the American army, 21-5615
Legions, Roman, 10-3550; 20-5276, 5384
Legislatures, desired by European peoples, 10-2596
 see also under individual names of countries
Legs, arteries of, 19-1829
 assist balance, 15-3988
 bones of, 10-2468, 2571, 2574; 16-4201
 broken, 15-3983; 16-4288-89
 crossed, of eagles, 6-1549
 of birds, 6-1504, 1508
 of centipedes and millipedes, 13-3356
 of unequal length, 7-1654
Legumes, and nitrogen, 12-3350
Leibnitz, Gottfried Wilhelm, German philosopher, 4-865
Leicester, Earl of, and Amy Robsart, 15-3880
 and Raleigh, 21-5410
 and Spenser, 21-5484
 in "Kenilworth," 6-1196
Leicester, English town, 4-1042
Leif, the Lucky: see Ericson, Leif
Leigh, Amyas, character in "Westward Ho!" 14-3713
Leigh, Frank, character in "Westward Ho!" 14-3714

GENERAL INDEX

- Leighton, Lord**, English artist, 16-1171
Leinster, division of Ireland, 21-5551
Leipzig, battle at, 9-2289, 10-2591, 12-2991; 17-4368
 German town, 11-2766
 see also Nations, battle of the
Leland Stanford Junior University, story of, 17-4570, 4575
Le Mans, France, Wrights at, 1-174
Lemieux Act, of Canada, 16-1129
Lemmings, migrations of, 3-805, 807
Lemonade-seller, of Egypt, 16-4303
Lemons, citric acid in, 18-4816
 in California, 10-2687
 in France, 9-2122
 in Porto Rico, 8-2156
 skins for boats, 15-3900
 where grown, 3-650-52
Lemons and Oranges, a game, 20-5348
Lemur, an animal, 3-631-32
 development of, 14-3664-68
 flying, 3-803-01
 use of hands, 14-3600
Lena River, in Siberia, 15-3894
L'Enfant, Peter Charles, laid out Washington, 7-1692
Length, unit of, 14-3673
Lens, town in Belgium, 14-3550
Lenses, and movie-film, 20-5137
 for telescope, 8-1967; 14-3785
 made at Jena, 11-2766
 of eye-glasses, 16-1834; 22-5721
 of eyes, 16-4331; 17-4425-26
 of microscopes, 9-2331
 in photography, 1-45
 making, 5-1269
 plant-cells act as, 18-4260
 replaced by leaves, 11-2799
Lensing, Elsie, and Heibel, 13-3399
Lent-lily: see *Daffodil*
Leodegran, King, character in "Table Round," 4-833
Leofric, the Dane, husband of Godiva, 20-5226
Leon, Bishop of, and Hennebont, 10-2508
Leon, King of, and Innocent III, 18-4797
Leon, kingdom of, 13-3340
Leon, province of Spain, 13-3339-40
Leonato, Shakespearean character, 3-563
Leonidas, at Thermopylae, 20-5150
Leonidas, Spartan patriot, 5-1322
Leonids, shower of meteorites, 7-135
Leontes, Shakespearean character, 3-560, 561
Leopard, an animal, 1-156, 159, 22-5501, 5506, 24-6242
 and porcupine, 3-681
 in India, 6-1631
Leopold, Alessandro, Venetian sculptor, 5-1172, 1174; 16-1173
Leopold, Austrian duke, 8-1551
Leopold II, Holy Roman Emperor, death of, 10-2561
Leopold, of Coburg, king of the Belgians, 14-3548
Lepanto, battle of, 12-3193-91; 13-3344, 20-5311, 22-5850
Lepor-hospital, lady managers of, 14-3543
Lepidoptera, order of insects, 12-3012
Lepidus, Roman, 22-5786
Lepidus, ruler of Rome, 17-4535
Leprosy, colony of lepers, 1-71
 hospital for, 8-2150
 in "Ben Hur," 20-5261
 in England, 11-2801
Leslie, G. D., his picture of Lady Derby, 18-4744
Lesseppe, Ferdinand de, and canals, 16-4301, 21-5593
Lesser Antilles, West Indian islands, 23-6041
Lesser Slave Lake, in Alberta, 19-5073
Lessing, Gotthold E., German writer, 13-3394, 3397
Lethbridge, Canadian town, 21-5608, 5612
Lethe Lake, 5-1309
Lethierry, character in "Tollers of the Sea," 16-4223
Letter-box, story of, 13-3408
Letters, above and below the lines, 6-1466
 fancy, 18-4923
 five new capital, 10-2692
 for embroidery, 23-6006
 learning to write, 9-2370
 made by linotype, 4-943
 missing, 21-5151
 more below the line, 7-1725
 of various nations, 13-3433
 verses made with, 22-5742
Letters, what they are, 3-688
 with loops above the lines, 5-1235
 see also Adjective-letter
Letters, and the post-office, 13-3407
 posted, 13-3408
 without postage stamps, 18-4112
Letton (John), a printer, 14-3612
Lettuce, cultivation of, 3-617; 12-2995, 3217; 13-3325, 3343; 14-3554; 15-3968; 18-4136
Leuttra, battle of, 5-1324
Leutze, Emanuel, American painter, 4-1005; 16-1220
Levant, ship, 12-3007
Levees, for holding back water, 9-2384, 23-6072-73
Levees, of Martha Washington, 2-398-99
Lever, Charles, writings of, 12-2975
Lever, use of, 14-3675
Leverett, Sidney, diver, 13-3296
Le Verrier (Urbain J. J.), French astronomer, 9-2391
Levis, town in Canada, 1-224
 see also Canada, railways and canals
Levity, no principle, 14-3591
Levulose, fruit sugar, 3-704; 18-4816
Lewes, battle of, 3-596
Lewis, Meriwether, explorer, 6-1397
Lewis and Clarke, expedition of, 13-3490
Lexington, battle of, 4-996, 999
Lexington, in Virginia, 23-5957
Leyden, town in Holland, 2-526; 14-3540, 3541, 3593
Leyden-jar, and electricity, 8-2163
Leyden University, founded, 14-3594
Lhasa, capital of Tibet, 16-3927, 3932
Lia Fail, stone in coronation-chair, 18-1688
Liang, who fished for stepmother, 23-6028
Liar, Mr., character in "Pilgrim's Progress," 5-1143
Liberals, of Mexico, 17-4102
Liberation, League of: see League of Liberation
"Liberator": see Bolivar, Simon
"Liberator", a newspaper, 13-3491
Liberator of Bulgaria: see Alexander II, of Russia
Liberator of Mexico: see Iturbide, A. de
Liberia, story of, 16-4297, 4308
Liberty, longing for, 10-2596
 religious, 10-2555
 statues of, 10-2688, 13-3191; 18-4666, 4669, 19-5008
 see also Songs of Liberty
Liberty-Bell, history of, 22-5740
Liberty-Bonds, issued, 13-3495
 what they are, 23-5996
Liberty, Statue of, in New York Bay, 10-2688, 13-3494
Library, in New York, 19-5011, 5016
 in Nineveh, 13-3480
 of Alexandria, 18-1853; 22-5786
 of Ashur-bani-pal, 19-4966
 of Boston, 20-5299
 of Caliphs, 15-3860
 of Congress, painting in, 18-4258
 of Louvain, 14-3550
 of Parliament, Ottawa, 16-1378
 of Thomas Jefferson, 3-781, 783
 of White House, 2-49
 reading-rooms for children, 12-322
 the royal, 15-3800
Libyans, and the horse, 23-6066
 Egyptian people, 18-4817
Libyan Sibyl, a statue, 18-4666
Lichens, insects that imitate, 13-3461, 3463
Lichfield, Dean of: see Addison, Joseph
Lick Observatory, in California, 8-1967; 11-2812-13
Licks, and wild animals, 24-6250
Liddell, Dean, daughters of, 6-1482
Liebig, Baron (Justus von), German chemist, 4-865, 868; 7-1889
Liège, town in Belgium, 14-3550
Lieutenant-Commander, naval rank, 23-6214
Lieutenant-Governor, of Canada: see Canada
 Lieutenant-governor of
Lieutenants, of army or navy, 18-4737, 4742; 23-6214
Life, and the lungs, 7-1647
 animal ladder of, 3-670
 around us, 1-87
 came out of the sea, 2-375
 chemically made, 16-4117
 depends on ferments, 16-4088
 depends on oxygen, 2-378
 elixir of, 8-1960
 in bad water, 8-2011

GENERAL INDEX

- Life**, key and symbol of, 21-5426
length of, 13-2391; 18-4812
on Mars, 9-2391
simplest kind of, 4-1019
what made of, 1-68, 185, 5-1195
where really is, 5-1121
- "Life and Opinions of Tristram Shandy,"** by Sterne, 7-1750
- Lifeboat**, centre of gravity of, 15-3886
race for the, 12-2999
self-righting, 10-2498
- Life, Book of Our Own:** see Tables of Contents
- Lifebuoy**, right way to use, 5-1362
- "Life Line,"** picture, by Homer, 16-4218
- "Life of Charlotte Brontë,"** by Gaskell, 10-2623
- "Life of Jesus,"** translated by Eliot, 10-2626
- "Life of the Bee,"** by Maeterlinck, 20-5311
- "Life of Washington,"** by Irving, 6-1610
- "Life on the Ocean Wave,"** song, 14-3768
- Life-rafts**, air-filled, 10-2498
- Life-saving**, by firemen, 22-5767
in water, 5-1362
- Ligaments**, of the body, 10-2466-67, 2617
- Light**, absorbed by dark colors, 13-2387
air stops, 14-3679, 3681
and corners, 23-6217
and darkness at same time, 12-3146
and ether, 15-1022
and heat, 16-4310
and photographic plates, 6-2011
and the spectrum, 11-face 2736, 2740
artificial, 3-662
as food for the body, 11-2729
as measure, 22-5814
attracts insects, 16-4262
boys who found, 21-5478-79
character in "Blue Bird," 22-5837-39
controls opening of buds, 15-4015
Cooper-Hewitt, 20-5138
does it die away? 10-2553
Edison and electric, 24-6311
effects of, 5-1164, 1284, 17-1272
electric glow of, 14-3678
flares up in kerosene, 16-1110
focused by lens-like cells, 16-1260-61
gets fainter as it travels, 10-2535
going out of, 13-3508
how man learned to strike a, 3-811
interference with, on foul water, 8-2011
made by gases, 5-1215
men who gave us, 3-663
necessary for life, 8-1921
necessary for plants, 11-2798-99
of day, 8-2007
of glow-worm and fire-fly, 13-3298
of planets, 9-2390-94
of sea, 14-3684
of stars, 8-2094
put out by steam or water, 14-3776, 16-1110
radiant, 16-4280
red, for developing photographs, 3-2011
red when eyes are closed, 3-392
reflected, 16-3907
refraction of, 9-2246, 3331; 16-4331, 17-1126, 22-5871; 23-6217
seeing, 19-4874
spectra of, 8-1969; 11-2739-41
speed of, 6-1592; 13-3386; 14-3677
streaks across sky, 7-1881
throwing, a game, 10-2591
travels any distance, 10-2535
yellow, 7-1796
weight of, 7-1781
what it is, 4-1084; 5-1285; 20-5163
when extinguished, 13-3508
white, 7-1877
waves of, 3-813, 6-1449; 11-2799; 13-3508, 14-3672, 3677-78, 3780; 15-3907, 17-4523, 4579; 20-6241
- Light Brigade**, charge of the, 5-1118
- Light Cavalry**, charge at Balaklava, 14-3729
- Lighthouse**, how it is built, 3-719
lamp of, 3-664, 668
Roman pharos at Dover, 16-4246
- Lighthouses**, United States Department in charge of, 6-1437
- Lightning**, and Franklin, 8-2164
effects of, 8-2082; 14-3678
heat of, 3-813
seen how far? 10-2585
strikes things, 11-2909
ways to guard against, 8-1943
why thunder follows, 3-813
worship of, 1-18
- Lightning-conductors**, invented by Franklin, 8-2166
- Lightning-Bridge**, in Australia, 24-6882
- Lightning-rod**, use of, 11-2909
- Light-pressure:** see Radiation-pressure
- Lights:** see Aurora Borealis, Light, etc.
- Light-year**, for measuring universe, 7-1790
- Ligny**, battle of, 17-4368
- Ligule**, of flower, 16-4206
- Liguria**, Republic of, 12-3073
- Lillian**, character in "The Chimes," 9-2301
- Lilienthal**, Otto, used gliders, 1-174
- Lilies of France**, and Lion of Lucerne, 22-5848
for ornament, 13-3380
or Fleur-de-lys, 3-794; 4-856; 9-2072, 9-2291; 20-5230
see also Fleur-de-lys, Iris
- Lili-Tsee**, and the mirror, 20-5182
- Lilium Speciosum**, a flower, 7-1738
- Liliuokalani**, queen of Hawaii, 8-2150
- Lille**, city in France, 9-2420, 2422
- Lilliput**, in "Gulliver's Travels," 5-1332-33
- Lily**, legend of, 18-1785
Madonna, 6-1519
scent of, 1-168
varieties of, 10-5229, 5236-37
see also Belladonna-lily, Day-lily, Lilies of France, Segoe-lily, etc.
- Lily-family**, of plants, 16-4186; 18-4654
- Lily-Maid of Astolat:** see Elaine
- Lily of the Valley**, a plant, 7-1738; 20-5230
- Lily-Tower**, in Florence, 11-2791
- Lima**, capital of Peru, 17-4514, 18-4602, 4608
- Limbs**, arteries of the, 16-4201
of animals, 3-673-75
of the body, 10-2569, 2572
origin of, 10-2164
remnants in snakes, 6-1379
- Lime**, for fowls, 18-4711
for leather, 11-2534
for maple-lantern, 14-3775
for plants, 14-3786
for purifying, 3-706
in concrete, 16-1211
in glass, 5-1261
in mortar, 5-1168; 13-3511
in sugar-refining, 3-704
in water, 6-1583
phosphate of, 4-868; 23-6048
slaked, 7-1815-16, 17-4371
used for light, 5-1215
see also Chalk, Quicklime
- Limelight**, making, 20-5168
- Lime-pits**, for leather, 11-2836
- Limerick**, siege of, 21-5557
- Limericks**, nonsense-rhymes, 22-5742
- Limes**, citrus fruits, 8-2156; 18-4816
- Limestone**, in Canada, 21-5511; 23-6092
production of, 10-2680
variety of rock, 20-5349
- "Limestone City,"** see Kingston
- Lime-tree**, the linden, 13-3261
- Limoges**, china made at, 9-2420
- Limon Bay**, beginning of canal, 21-5594
- Limousines**, kind of car, 19-4459
- Limpets**, shell-fish, 6-1427, 10-2617; 17-4192
- Linacre (Thomas)**, physician, 18-1630
- Lincoln**, Abraham, administration of, 13-3488, 3492
and Douglas, 10-2113
as commander-in-chief, 6-1438
as president, 2-402, 8-2044-46, 2050
assassination of, 8-2051
born in Kentucky, 9-2382
comment on Whitman, 6-1620
during Civil War, 8-2053
from Illinois, 9-2382
Gettysburg Address of, 3-778
head of, 7-1686
life of, 3-779, 785, 788
monument, 7-1692
statues to, 18-4664, 4672, 4674; 22-5828
Thanksgiving Proclamation of, 17-4467
- Lincoln, Mary Todd**, of the White House, 2-399, 402
- Lincoln Park**, in Chicago, 22-5828
- Lincoln's Birthday**, celebration of, 17-4463, 4466
- Linden**, Jack, character in "Magic Pen of Truth," 8-2062
- Linden**, a tree, 13-3261
- Lindisfarne**, abbey of, 2-468
- Lindsay**, Lady Anne, song-writer, 14-3767, 3770
- Lines**, how to draw straight, 5-1239
lines on hands, 5-1165
moving in straight, 14-3676

GENERAL INDEX

- Line**, of longitude, 12-3047
 Plimsoll's, 3-695; 6-1588
 spiral of sound, 21-5601
 see also Spectrum
- Line** (of poetry), which can be said twenty-five ways, 21-5449
- Linens**, and the Netherlands, 14-3542
 feels cool, 3-692
 in Belgium, 14-3550
 in France, 9-2420
 trade in, 4-1042
 United States manufacture of, 10-2686
- Line of Demarcation**, the Papal, 13-3342, 20-5368
- Link**, eggs of, 10-2601
- Linkers** (y Bremont, Santiago A. M. de), assisted Argentine, 20-5361
- Link**, a torch, 3-663; 23-6051
- Link-boys**, use of, 3-663, 23-6051
- Link-stands**, use of, 23-6051
- Linnaea borealis**: see Twin-flower
- Linnaeus**, Charles, Swedish botanist, 4-861-65, 869, 12-3064, 14-3566, 15-1011
- Linnekegel**, high flight of, 1-177
- Linnæet**, a bird, 8-2101, 2106, 2112, 2114, 9-2350
 egg of, 7-face 1760
- Linotype**, type-setting machine, 4-917-18
- Linsay-woolsey**, a cloth, 4-961
- L'Insurgent**, ship, 12-3006
- Linton, Mrs. Lynn**, English author, 10-2621, 2627
- Linton Falls**, flood of, 18-1661
- Liums**, flowers, 1-219
- Lion**, an animal, 1-150-51, 153; 3-675, 805, 9-2350, 19-1872, 22-5801
 and Androcles, 18-1786
 and cat, 23-6133
 and four bulls, 13-3501
 and fox, 13-3370
 and Hercules, 13-3371, 20-5185
 and jackal, 21-5481-82
 and Kahr, 22-5685
 attacks on men, 22-5802
 Canova's butter, 20-5381
 capture of, 24-6212
 Cunty Rabbit and the, 2-502
 day of his life, 22-5882-83
 Gate of Lions, 19-5010, 5013
 goat and the, 13-3504
 head of, 17-1701
 in "Don Quixote," 4-970
 in love, 18-1866
 king, 21-5564
 lions, halt African railway, 22-5806
 Lord of the Lions, 10-2636
 memorial of Swiss guards, 7-1820
 of England, 4-855, 9-2351
 of Landseer, 19-5010
 of Lucerne, 9-2284; 22-5814
 of St. Mark, 19-5041, 5043
 of Trafalgar Square, 5-1262
 on flag of England, 7-1657
 rampant on Scots' coat of arms, 12-3186
 Renard et le, 21-5532
 spring of, 22-5803
 stuffed, 20-5333
 stuffed cloth, 3-727
 talk of, 21-5506, 5509
 teeth of, 12-3098
 t'n'a's, in "Fierle Queen," 3-639
 winged, of St. Mark, 5-1169
 young of, 22-5886
 see also Ant-lion
- Lion**, constellation, 10-2639, 2619
- Lion**, geyser, 3-587
- Lion**, ship, 23-6114
- Lionel**, Duke of Clarence, 3-773
- Lioness**, a geyser, 3-587
- Lion-Heart**: see Richard I, of England
- Lippi, Fra Filippino**, Florentine painter, 19-5097, 5100, 5102
- Lips**, of giraffe, 4-1015
 use of, 8-2171
- Liquid-air**, in coal-mines, 17-1375
- Liquidambar**, a tree, 20-5340, 5343
- Liquids**, characteristics of, 15-3977, 3984
 effects of cold and heat on, 17-1393
 in sucked tube, 19-1877
 specific gravity, 15-3827-29
 viscous, 19-5022
- Lisbon**, capital of Portugal, 13-3347, 22-5756
- Lisele, Guillaume de**, French geographer, 18-4057
- Lisgar, Lord**, governor of Canada, 5-1281
- Lisle, Bouget de**, author of "La Marseillaise," 9-2281; 14-3765
 poems: see Poetry Index
- Lissard, Castle**, and Lady Edgeworth, 4-1065
- Lister, Lord (Joseph J.)**, English surgeon, 9-2332; 10-2539; 18-4626; 24-6365-67
- List (Franz)**, musician, 13-3285, 3294
- Literature**, American, 8-1609
 of Canada, 5-1281
 of Venetians, 5-1168
- Lithium**, specific gravity of, 15-3828
- Lithuania**, girls of, 15-3799
 history of, 14-3723
- Litmus**, a dye, 7-1815
- Little Bear**, constellation, 10-2639, 2611, 2642; 13-3374
- Little Belt**, Danish waterway, 14-3658
- Littlecare, Lady**, in story of Merrymin, 17-1114
- Little Dog**, a constellation, 10-2642, 2645
- "Little Dorrit"**, by Dickens, 10-2461
- Little Elk Lake**, in Minnesota, 23-6071
- Little Falls**, canal-lock at, 18-4769
- Little Garden Month by Month**, April, 1-249; 3-616
 August, 5-1363; 6-1519
 December, 8-2140, 9-2266
 July, 5-1249, 1297
 June, 4-931, 5-1098
 May, 3-732, 4-844
 November, 8-1914, 2039
 October, 7-1852, 1853
 September, 6-1602; 7-1738
- "Little Giant"**, 3-786
 see also Douglas, Stephen A
- Little John**, an outlaw, 10-2630, 2633
- "Little Lord Fauntleroy"**, by Burnett, 8-2100
- "Little Men"**, by Alcott, 8-2099
- Little Nell**, character of Dickens, 9-2320
- Little Paris**: see Brussels
- Little Picture-Stories in French**, 1-269, 2-462
 3-717, 4-991; 5-1240; 6-1471, 7-1731, 8-1952, 8-2244; 17-4577
- Little Problems for Clever People**: see Tables of Contents
- "Little Red-Hiding-Hood"**, authorship of, 6-1477
- Little Rock**, capital of Arkansas, 23-5962
- Little Russia**, girls of, 15-3799
- Little Scheidegg**, in Switzerland, 22-5816
- "Little Women and Good Wives"**, by Alcott, 8-2099; 20-5169
- Live-loose, Mr.**, character in "Pilgrim's Progress," 5-1183
- Liver**, a gland, 9-2363, 2366; 16-1110; 23-6013, 6015
- Liver-fungus**: see Beefsteak-fungus
- Liver-leaf**: see Hepatica
- Livermore, Mary**, and United States Sanitary Commission, 12-3122
- Liverpool**, and gas-lights, 3-667
 history of, 5-1116
- Liverpool of Spain**: see Barcelona
- Lives**, and the nation, 20-5303
- Livesey, Doctor**, in "Treasure Island," 14-3630
- "Lives of the Hunted"**, by Seton, 6-1621
- Livingston, Robert**, portrait, 4-1003
- Livingstone, David E.**, and Victoria Falls, 13-3100
 comment on Baker, 17-4578
 missionary and explorer, 2-296, 3-626; 5-1120, 6-1379; 22-5902
- Lyonia**, taken by Sweden, 14-3656
- Livy (Titus L.)**, Roman historian, 20-5280
- Lizard**, character in "Alice in Wonderland," 11-2962
 food of Arabs, 23-6102
 in gnome story, 15-3874
 limbs of, 10-2464
 prehistoric, 1-13, 50, 54; 5-1209
 skins for leather, 11-2834; 12-3106
 various kinds of, 3-673; 5-1209, 1217-20
- Lizard Point**, in Cornwall, 6-1414
- Lisotte River**, in "Abbé Constantine," 18-4751
- Llacta-camayoo**, Peruvian officer, 17-4508
- Llama**, draft animal, 2-293, 295, 17-4509-10; 18-4610
- Llanos**, South American plains, 18-4604
- Llewelyn**, prince of Wales, Welsh hero, 1-128, 3-770; 20-5385
- Load-line**, of ship, 18-4619
- Loadstone**, magnetic ore, 8-2161, 2163, 2167; 21-5527
- Lobelia**, a plant, 16-4136
- Lob-nor**, lake in Asia, 12-3128
- Lobster**, canneries of, 24-6294
 fisheries, 15-2843, 3956-57
 habits of, 10-2611, 2613-14; 21-5663
 skeleton of, 10-2468

GENERAL INDEX

- Lobster Quadrille**, in "Alice in Wonderland," 12-3158
- Lobworms**: see Lugworm
- Loch Leven**, castle of, 12-3141-42
- Lock**, how key turns, 24-6359
made by Louis XVI, 9-2280
making a, 24-6357
puzzle of the secret, 11-2806, 2875
working of, 24-6362
- Locke, John**, and the mind, 18-4748; 19-4995, 5080
comment on feet, 8-1983
- Lock-heart, Sir Simon**, and Bruce's heart, 12-3138
- Lookjaw**, a disease, 4-821; 17-4484
see also Tetanus
- Look-out**, by employers, 16-4128
- Lockport**, and the Erie Canal, 18-4769
- Locks**, of the Erie Canal, 18-4769
- "Locksley Hall"**, by Tennyson, 23-6036
- Lockyer, Sir Norman**, and sun's prominences, 8-2092, 2094
- Locomotion**: see Translation
- Locomotive**, electric, 2-314-15
first, 3-603
in United States, 10-2688
Murdock's model, 3-665
of 1848, 2-314
oil-burning, gigantic, 2-311
Pacific type, 2-304-05
- Locomotive-Engineers**, Brotherhood of, 18-4128
- Locust**, a tree, 14-3747; 17-4556, 4562
see also Honey-locust
- Locusts**, Arab food, 23-6102
injurious insects, 12-3195-97
- Lodge, Sir Oliver**, and foxes, 12-3144
and wireless telegraph, 17-4448
- Lofoden Islands**, 14-3661
- Lofter**: see Mashie
- Log**, floating timber, 1-229
in Ottawa River, 16-4131
rolling, water trick, 11-2726
- Logan, General John A.**, and Decoration Day, 17-4169
- Logan, John E.**, poems: see Poetry Index
- Logan, Mount**, in Canadian Rockies, 22-5778
- Loggia di Sanzia**, in Florence, 22-5852
- "Lohengrin"**, by Wagner, 13-3293
- Lohengrin**, or the Swan-knight, 21-5561
- Loire River**, of France, 9-2418
- Loki**, a god, 14-3623, 23-5994
- Lombard Kingdom**, 12-3078
- Lombardo Family** (Pietro, Tullio, Antonio, Giulio, Sante, Moro), Italian artists, 5-1173
- Lombards**, in Italy, 5-1167; 10-2550, 2552, 12-3076
- Lombardy**, iron crown of, 12-3078
Italian province, 12-3074, 3078, 3086, 19-4992
- Lombroso, Cesare**, Italian psychologist, 20-5315
- Lombroso, Gina**, wife of Ferrero, 20-5315
- Londinium**: see London, name of
- London**, alcohol and children in, 21-5440
and De Huyter, 14-3547
and fur-auctions, 18-4836
and Rothschild, 24-6336
bridge of sighs in, 5-1166
British mint in, 14-3645-46
cutlery and, 18-4801
fires in, 22-5756
first boy in, 23-6019
fog in, 4-821
fossils beneath, 11-2919
girl who walked to, 9-2236
Gog and Magog of, 5-1354
great builders of, 5-1253
great fire of, 4-1042; 5-1116
gulls in, 7-1642
history of, 1-212, 4-1042; 5-1118
houses of parliament, 5-1260-61; 6-1538, 1544-45; 7-1806-07
maps of, 7-1766
monuments of, 19-5039, 5044-47
name of, 20-5358
obelisk in, 18-4849
police of, 20-5397
school of physicians in, 18-4630
see also England, Tower of London, Westminster-Abbey, etc.
- London Bridge**, 1-23; 5-1331
- London Company**, colonies of, 2-522, 526
- Londonderry**, Irish town, 21-5556
- London Mary**, battle of, 7-1778
- London-bridge**, a plant, 16-4136; 18-4837; 20-5229
- Long, Dr. Crawford W.**, and nitrous ether, 18-4633
- "Long Bright World"**: see New Zealand
- Longchamps, William**, lord-chancellor, 23-6196
- Longchamps**, race-course of, 21-5538
- Longfellow, Henry W.**, American poet, 4-898, 923, 998, 1055; 6-1609, 1613-15
anagram on the name, 19-5037, 5133
poems: see Poetry Index
- Long Island, N. Y.**, and glacier, 1-14
- Long Island Sound**, bridge over, 1-22
history of, 1-14
- Longitude**, and time, 12-3047
observations for, 7-1682
what it is, 7-1766
- "Long Jack"**, character in "Captains Courageous," 20-5375
- Longmarston Moor**, battle of, 7-1776
- Long Moses**, characters in "Round the World," 19-4916
- Longobards**: see Lombards
- Long Parliament**, of England, 7-1866
- Long Point**, British at, 12-3009
- Long-purples**, an orchid, 17-4479
- Long Ride**: see Bumpkin, Nathaniel
- "Long Roll"**, by Johnston, 8-2101
- Long Sault Rapids**, in the St. Lawrence, 23-6121, 6123
- Longside**, route of, 12-3112
- Long-sightedness**, cause of, 16-4332
effects of, 17-1626
- Longstone Lighthouse**, and Grace Darling, 7-1742
- Longstreet, General (James)**, during Civil War, 8-2050
- Longueuil**, village of, 23-6121
- Longueval**, in "Abbe Constantin," 18-4751
- Loofah**, as a sponge, 13-3510
- Looking-glass**, for measuring, 23-6005
reflections of, 20-5175
puzzle of the, 10-2588
- Look-out game**, 23-6078
- Lookout Mountain**, battle of, 8-2050
- Loon**, a bird, 7-1645-46
- Loop**, looping the, 1-178
- Loosestrife**, various kinds of, 19-4949, 4952-53, 1956, 20-5210
- Lopez, Carlos Antonio**, Paraguayan dictator, 18-4610
- Lop Nov**, district of, 15-3930, 3933
- Lord**, the, and Moses, 24-6330
- Lord Dunmore's War**, with Indians, 24-6253
- Lord of the World**, 6-1636
see also Juggernaut
- Lords**, House of, 4-1036
see also Parliament, Houses of
- Lords-and-ladies**: see Cuckoo-bint
- Lords-Proprietors**, of early America, 2-528, 531
- Lorenzo**, lover of Jessica, 2-332
- Lorenzo, Aldonza**, character in "Don Quixote," 4-901
- Lorenzo, the Magnificent**: see Medici, Lorenzo di
- Loris**, an animal, 3-631-32
- Lorne, Marquess of**, governor of Canada, 5-1281
- Lorraine, Claude**: see Claude Lorraine
- Lorraine**, history of, 9-2290, 10-2600
see also Alsace-Lorraine
- Los Angeles**, view near, 10-2687; 22-5710
- Losantville**: see Cincinnati
- Losborne, Mr.**, character in "Oliver Twist," 10-2365
- Lost**, snake killed, 6-1280
- Lost Continent**, 12-3035
- Lottery**, for British Museum, 5-1258
- Lotus-blossom**, in decorations, 13-3380
Japanese doll, 13-face 3434, 3439
- "Lotus-eaters"**, by Tennyson, 23-6036
- Loudan, Monat**, his painting of Elaine the Fair, 5-1198
- Loughman**, a diver, 24-6312
- Louis, St.**: see Louis IX, king of France
- Louis (II)**, king of Hungary and Bohemia, death of, 11-2900, 2903
- Louis IV**, king of France, and Genoa, 12-3078
- Louis VII**, king of France, and fleur-de-lys, 22-5816
called Le Jeune, 6-1553
- Louis IX**, king of France, and Crusades, 6-1548, 1555
called Saint Louis, 8-2066, 2070; 21-5535
- Louis XI**, king of France, and the Crusades, 15-3860
and Netherlands, 14-3544
- Louis XII**, king of France, and daughter Renee, 14-3895
and the nobleman, 14-3711

GENERAL INDEX

- Louis XIII**, king of France, and Vincent de Paul, 12-3069
- Louis XIV**, king of France, "Age" of, 8-2074 and Canada, 20-5295 and Germany, 10-2559 and Mollere, 20-5309, 5311 and Switzerland, 12-2991 and the Netherlands, 14-3547 buildings of, 21-5535, 5537, 5540 incidents of reign, 4-1012-43; 9-2416 wars of, 13-3344 writing exercises of, 15-3800
- Louis XV**, king of France, and America, 3-559 at Versailles, 9-2279 reign of, 8-2073 surrendered Hudson Bay region, 18-4832
- Louis XVI**, king of France, and America, 12-3004 and "Malbrough," 14-3773 and the Revolution, 9-2279-80; 16-4099-4100, 4103, 4106 defended by Swiss, 7-1820 execution of, 8-1187; 10-2561 reign of, 8-2073, 21-5536-37
- Louis XVII**, and Elizabeth Patterson, 19-4916
- Louis XVIII**, character in "Count of Monte Cristo," 16-4315 reign of, 2-360; 9-2289
- Louisbourg**, capture of, 3-559, 4-895, 898-99, 21-5518
- Louise**, Princess, and Rideau Hall, 8-1156
- Louise**, queen of Prussia, and cornflowers, 7-1705; 22-5816 and Napoleon, 10-2593
- Louise, Lake**, in Canada, 15-3904, 22-5776
- Louisiana**, admitted, 7-1836, 13-3490 boll-weevil in, 12-3206 climate, 1-10; 9-2384 during Civil War, 8-2050 flower of, 22-5815 making of, 6-1397 name of, 8-2074 petroleum in, 10-2680 presidents from, 9-2382 secession, 8-2044, 13-3492, 23-5957 sugar in, 3-704 territory of, 4-900 timber in, 9-2387
- Louisiana Purchase**, centennial of, 13-3495 history of, 6-1396, 7-1839 13-3490, 24-6251, 6256
- Louisiana Territory**, history, 23-5960
- Louis Napoleon**: see Napoleon III
- Louis Philippe**, king of France, and Lafayette, 16-4106 incidents of reign, 9-2289; 23-6059
- Louiseberry**, Charles, last will of, 20-5379
- Loup**, et le Chevreu, 18-4854 et la Cigogne, 17-1317
- Louse-wort**, a plant, 15-3892
- Louvain**, burned, 14-3550
- Louvain, University of**, students at, 18-1630
- Louvestein**, Castle of, Grotius' escape from, 10-2665
- Louvre**, museum of the, 21-5533, 5535, 5542
- Love**, emotion of, 20-5190 most valuable thing, 22-5893 that is stronger than death, 16-1091 see also Cupid
- Love-birds**, of Africa, 7-1779
- Love-in-idleness**, magic-flower, 2-127
- Lovel**, Lord, bride of, 14-3767
- Lovel**, Mr., character in "Antiquary," 7-1667
- Love laughs at locksmiths**, 6-1525
- Loveleaves**, character in story of Grey and White Castles, 7-1903
- Love-lust**, Mr., character in "Pilgrim's Progress," 8-1183
- Lover**, Samuel, novelist, 14-3771 poems: see Poetry Index
- "Love's Labour's Lost"**, by Shakespeare, 21-5584
- Low**, Will H., American painter, 16-4258
- Low Countries**: see Netherlands
- Lowell**, James Russell, American writer, 3-756, 4-1069; 6-1618 poems: see Poetry Index
- Lowell, Professor (Perceval)**, his study of earth, 12-3126
- Lowell Observatory**, in Arizona, 12-3126
- Lower Canada**, province of, 3-756, 5-1271 see also Canada
- Loyalists**, American, in Canada, 3-754, 756, 758-59 American, in War of 1812, 6-1399
- Loyalists**, of Canada, 21-5546, 5549 see also Tories
- Loyola**, Ignatius, and Jesuits, 15-4029; 22-5933
- Lübeck**, free town, 10-2554, 2561, 2596
- Lucas**, Sir Seymour, pictures of, 4-863; 8-2073
- Luce Hall**, at Annapolis, 18-4735
- Lucentio**, Shakespearean character, 3-643
- Lucerne**, Lion of, 7-1820; 9-2284
- Lucerne**, town in Switzerland, 12-2985-86; 22-5848
- Lucerne, Lake**, in Switzerland, 12-2982; 22-5844, 5847
- "Lucia"**, by Donizetti, 12-3294
- Luciana**, Shakespearean character, 3-639
- Lucifer**, 3-811 see also Match, why does it strike
- Lucius**, a British king, 18-4681
- Luck**, what is? 8-1289; 9-2318
- Lucknow**, siege of, 5-1119, 7-1720
- "Luck of Edenhall"**, by Uhland, 12-3396
- "Luck of Boaring Camp"**, by Harte, 6-1620
- Lucre**, hill called, in "Pilgrim's Progress," 5-1183
- "Lucrece"**, by Shakespeare, 21-5586
- Lucretia**, Roman lady, 2-435
- Lucy**, Charles, his picture of Lord Nelson, 11-frontis
- Lucy**, Sir Thomas, and Shakespeare, 21-5580, 5583
- Ludgate Hill**, in London, 5-1257
- Ludovick**, and Hinda, 16-4236
- Ludovic**, character in "Cloister and the Hearth," 16-1073
- Ludwig**, king of Bavaria, and R. Wagner, 13-3293
- Ludwig I**, king of Bavaria, temple of fame, 11-2769
- Luffa**: see Loofah
- Lugworm**, an animal, 10-2615, 2617
- Luke**, Mrs., poems: see Poetry Index
- Lumber**, in Newfoundland, 24-6296 in W. Indies, 23-6045
- Lumber-industry**, in United States, 10-2684
- Lumbering**, in Canada, 1-226 in New Zealand, 6-1489
- Lumen**, meaning of, 14-3572; 20-5167
- Luminosity**, of thinker at night, 15-4022
- Lumpfish**, eggs of, 10-2601
- Lump-sucker**, a fish, 10-2608
- Luna**, the moon, 9-2249
- Lunacy**, caused by moon, 13-3384
- Lunch-basket**, for a picnic, 14-3643
- Lundstrom**, J. H., devised safety-matches, 9-2128
- Lundy's Lane**, battle of, 3-759, 6-1399
- Lung-fish**, of Australia, 10-2479-80, 2699
- Lungs**, all in, 7-1803 cilia of, 7-1671 circulation of blood through, 6-1431, 1461-62, 1593-95 development of, 15-4000 of fish, 10-2479-80, 14-2666 work of, 3-814, 4-917; 7-1647, 14-3781; 16-4200-01; 21-5622; 24-6232, 6306, 6308
- Lungwort**, a plant, 16-4136
- Lupercus**, a god, 17-1532
- Lupin**, Mrs., character in "Martin Chuzzlewit," 10-1673
- Luques**, Hernando de, Spanish priest, 17-4510
- Lusitania**, ship, 10-2487
- Lute**, story of, 5-frontis
- Lutetia**, early name of Paris, 21-5534
- Luther**, Martin, and the Reformation, 10-2555-56 hymns of, 8-2014, 2017 in Rome, 22-5933 portrait, 8-2017 story of monk, 13-1433 teachings of, 14-3344
- Lutherans**, religious sect, 10-2556; 14-3733
- Lützen**, battle of, 10-2558, 14-3653
- Luxembourg Museum**, exhibits in, 18-4174
- Luxmore**, Lord, character in "John Halifax," 15-3973
- Luxor**, temples of, 18-4849; 19-5042; 23-6184, 6188
- Luxon**, island of, 8-2153
- Lyall**, Edna, English author, 10-2627
- "Lycidas"**, by Milton, 22-5674
- Lycopodium**-powder, for voice-pictures, 20-5254
- Lycurgus**, and Spartan laws, 20-5202
- Lydia**, Asiatic country, 20-5145
- Lyell**, Sir Charles, English geologist, 4-865, 868, 870; 13-3250
- Lynn**, Ethel, poems: see Poetry Index
- Lynn**, Mary, American educator, 12-3118

GENERAL INDEX

- Lynn**, shoemaking centre, 12-3102
Lynn Canal, 8-1916
Lynn, an animal, 1-156, 160; 3-305; 15-4060; 19-5074
Lyons, French city, 9-2418, 2420-22; 12-3123
Lyra, nebula in constellation, 11-2844-47
Lyre, a constellation, 10-2639-41, 2643
Lyre-bird, of Australia, 7-1759, 1761; 8-2113
Lys, signal officer, 4-1063
Lysander, lover of Hermia, 2-327
Lysicrates, choragic monument of, 19-5040, 5043
Lysippus, Greek sculptor, 16-4172
Lysantrina dispar: see Gipsy-moth
Lyte, Henry Francis, hymns of, 8-2017-18
 poems: see Poetry Index
Lyttleton, city in New Zealand, 6-1490
Lytton, Edward G. E. L. Bulwer, English author, 9-2321, 2324-25
- M**
- "M"** in the Prayer-book, 13-3433
McAdam, John London, road-builder, 1-168
McAlpin, Kenneth: see Kenneth M'Alpin
Macaroni, made of wheat, 11-2941, 12-3085
Macaulay, Thomas B., English writer, 5-1133; 18-4723, 4731, 20-5273; 21-5535
 poems: see Poetry Index
Macaw, a bird, 7-face 1752, 1763; 17-1406
Macbeth, king of Scotland, 6-1299, 12-3133
"Macbeth" by Shakespeare, 12-3133, 13-3508; 21-5583, 5588
Macbricar, character in "Old Mortality," 7-1779
Maccabees, why so-called, 1-127
MacCandlish, Mrs., character in "Guy Manner-ing," 6-1626
McCarroll, James, poems: see Poetry Index
McCarthy, Henry, and "Donnie Blue Flag," 12-3054
McClellan, George B., Union general, 8-2017-48, 2051
McClure, explorer, 21-5157-59
McCombich, Evan Dhu, in "Waverley," 6-1199
McCormick, Cyrus Hall, reaping-machine, 11-2714
Macdonald, Allan, husband of Flora, 4-1002
Macdonald, Flora, and Young Pretender, 4-1002
Macdonald, George, English writer, 6-1183
 poems: see Poetry Index
Macdonald, Greville, and his marble head, 6-1483
Macdonald, Hugh, father of Sir John, 16-4324
Macdonald, Sir John A., and Canada, 5-1270, 1278, 1280-81; 16-1324-25
MacDonald, Thomas E., and motor, 21-5602, 5606
Macdonald, Mount, in Canada, 22-5780
Macdonough, Thomas, commanded on Lake Champlain, 12-1005, 3010
Macdougall, William, and Reil Rebellion, 5-1278
Macdowell, Edward, musician, 13-3294
Macdowell, Dr. Ephraim, operations of, 18-4632
Macdowell, Irwin, Union general, 8-2016
Macdowell (Patrick), sculptor, 19-5040
Macedon, history of, 5-1323-26
 see also Alexander the Great, Greece
Macedonia, costumes of, 13-3245
 history of, 12-3186, 3190; 13-3240, 3247; 20-5150, 5154, 5209
Macedonian, ship, 6-1398, 12-3007
Macedonian Army Corps, and Young Turks, 13-3246
McEwen, Walter, paintings of, 7-1688
McGee, Thomas D'Arcy, poems: see Poetry Index
McGill, James, founder of McGill University, 7-1768; 21-5400
McGill University, in Montreal, 1-226; 7-1768, 18-4826, 21-5400, 5402
Macrairodus, 1-50
Machine-guns, 9-2712-13
Machines, agricultural, 5-1130; 10-2684
 centrifugal, 3-706, 708
 counting, 22-5721
 for shoe-making, 12-3105, 3107
 handled by magnets, 21-5527
 harvesting, 5-1136
 in Canal Zone, 21-5099
 infernal, 16-4284
 lack of power, 5-1191
 manure-spreading, 16-4145
 mind-grasp of, 19-4998
 perpetual-motion, 14-3590; 23-5992
 seed-sowing, 16-4148
- McIlhenny**, H. E., protects birds, 9-2343
Macintosh, Charles, and rubber-coats, 3-698; 22-5794
Macintosh, invention of, 9-693; 22-5794
MacIntyre, Capt. Hector, character in "Antiquary," 7-1669
MacIntyre, Mary, character in "Antiquary," 7-1668
MacIvor, Fergus, in "Waverley," 6-1499
MacIvor, Flora, in "Waverley," 6-1499
MacKay, A. E., educational leader, 21-5404
Mackay, Dr. Charles, poems: see Poetry Index
 song-writer, 14-3768
McKay, Gordon, and sewing machine, 12-3101
McKay, Spruce, a lawyer, 3-784
McKay Sewing-machine, for shoes, 12-3103
Mackenzie, Alexander, fur-trader, 5-1280; 18-4831, 1833
MacKenzie, Duncan S., educational leader, 21-5404
Mackenzie, Sir George, and Sir John Macdonald, 16-4324
Mackenzie, William Lyon, Canadian leader, 3-759
Mackenzie, part of New Zealand, 6-1487
Mackenzie River, fur-traders on, 18-4838 of Canada, 8-1918; 18-4831, 4838
Mackeral, fish, 10-2602-03, 15-3840-41
Mackie, character in "Partners," 1-139
Mackinac, Island of, 23-6120
McKinley, William, administration of, 13-3488, 3194
 as president, 8-2154; 9-2378
 came from Ohio, 9-2382
McKinley, Mount, in Alaska, 8-2148
McLellan, Isaac, poems: see Poetry Index
McLennan, William, poems: see Poetry Index
MacLise, Daniel, picture of Wellington and Blucher, 17-1365
MacMonnies, Frederick W., American sculptor, 15-3920-21, 16-1174; 18-4674
MacMorian, character in "Guy Mannering," 6-1636
McMurdo Sound, in antarctic, 21-5166
MacMurrugh, Dermot, king of Leinster, 21-5551
MacNally, Leonard, song-writer, 14-3769
MacWhirter, J., picture of Dark Tower, 19-5119
Mad Abbe, character in "Count of Monte Cristo," 16-1319
Madagascar, animals of, 3-631-32, 302; 24-6319
 birds of, 6-1501, 8-1976
 French colony, 9-2426; 16-4308
Madame Mere, mother of Bonaparte, 19-4942, 1945
"Mad Anthony": see Wayne, Anthony
Madder-family, of plants, 18-1660
Madreia River, in South America, 18-4606
Madeline, character in "Nicholas Nickleby," 10-2672
Madero, Francisco, president of Mexico, 17-4404
"Madge Wildfire", character in "Heart of Midlothian," 7-1773
Mad Hatter, in "Alice in Wonderland," 6-1482
Madison, Dolly, of the White House, 8-399
 saved portrait of Washington, 7-1691
Madison, James, administration of, 13-3488, 3490
 and Gallatin, 10-2137
 as president, 2-401, 6-1388, 1397; 7-1837; 9-2382
 delegate to convention, 6-1391
Madison, Mary, a clock, 6-1538
Madison Square, in New York, 19-5013
Madison Square Presbyterian Church, in New York, 19-5013
Madison, Wisconsin, university at, 17-4573
Mad Molly, in the witch's ring, 2-505
Madness, the dancing: see Tarantula
"Madness of Philip" by Bacon, 6-2103
Madonna, and child, pictures of, 17-4593
 meaning of, 17-4590
Madonna-lily, a plant, 20-5229
"Madonna of the Tabs" by Phelps, 8-2100
Madras, battles of, 7-1718
 English at, 7-1716-17
 factories at, 7-1716-17, 16-4078-79
 port of India, 6-1634
Madrid, capital of Spain, 13-3344, 3348
Maeenas, patron of poets, 20-5308-09
Maelar, Lake, in Sweden, 14-3660
Maelstrom, a whirlpool, 5-1309; 18-4811; 19-5056
Maeterlinck, Maurice, Belgian author, 6-1462; 20-5314; 22-5835
Mafeking, siege of, 23-6136
Magasins, du Louvre, in Paris, 21-5540

GENERAL INDEX

- Magdalen Islands**, belong to Prince Edward Island, 21-5546
- Magdeburg**, German town, 11-2762, 2766
- Magellan, Ferdinand**, navigator, 8-2152; 17-4511
voyage of, 1-66
- Magellan, straits of**, 1-66; 2-280; 17-1511
- Magenta, battle of**, 12-3084
- Magero, island of**, 14-3661
- Maggiore, Lake**, in Italy, 5-1308; 12-2982, 3071, 3077
- Magi**, the Wise Men of Persia, 12-3028; 20-5116, 5155
- Magic**, story of, 1-201
- Magician**, how to be, 2-382
in story, 7-1699
see also Archimago
- "Magic Flute,"** by Mozart, 13-3290
- Magic-lantern**, how to make, 11-2807
light of, 14-3775
- Magna Carta**, Langton and, 18-4797
signing of, 3-584, 595-96
- Magnates, Table of**: see Hungary, parliament of
- Magnesia, battle of**, 20-5276
- Magnesium**, in milk, 11-2828
in spectrum, 11-140; 2736, 2741
in sun, 8-2084, 19-5025
- Magnesium chloride**, in Dead Sea, 22-5815
- Magnet**, work of, 21-5527
- Magnetism**, and electricity, 20-5365
and sunspots, 8-2090
- Magnets**, and compass, 17-4482
and electricity, 8-2163, 2167-68
and sunspots, 23-5997
handling steel, 22-5706
power of, 8-2169; 20-5294, 5355 21-5527
- Magnificent, The**: see Aldehl, Lorenzo di, Suleiman
- Magnifying-glass**, how it makes things bigger, 1-16, 48
- Magnolia**, state flower, 22-5815-16
- Magog**, a giant, 5-1344
see also Gog and Magog
- Maggies**, birds, 7-1901-02; 9-2217
egg of, 7-face 1760
nest of, 22-5759
pigeon and the magpie, 11-2758
- Magruder, Julia**, American writer, 8-2103
- Magua**, Indian guide, 1-197
- Magwitch**, character in "Great Expectations," 10-2461
- Magyars**, ancestors of Hun and 10-219
11-2894, 2898, 12-3076, 21-5652, 5658
- Mahan Hall**, at Annapolis, 18-4713
- Maharajah**, great prince of India, 6-1618 7-1717
see also Maharattas
- Maharattas**, Indian people, 17-1366
- Mahdi**, the, rebellion of, 18-1306
- Mahmud**, of Ghazni, 7-1714
- Mahogany**, a tree, 21-5135, 23-6014, 6018
knowing, 19-4034
- Mahomet**: see Mohammed
- Mahoney, Francis Sylvester**, poems see Poetry Index
- Mahonia**, a shrub, 17-1565
- Mahout**, elephant driver, 7-1719, 13-3371
- Mahratta**, and the elephant, 13-3372
- Mahrattas**, natives of India, 7-1720
- Mais**, a flound, 13-3374
daughter of Atlas, 17-1533-34
see also Thunbeline
- Maid**, of Noyon, 10-2666
of the mill, 12-3000
of Van Lake, 9-2316
of Wessex, 9-2316
who led an army, 17-1381
- Maidenhair-ferns**, and wood-lice, 12-3356
- Maidens**, St. Ursula and the 10,000 4-1024
- Maid Marian**, and Robin Hood, 10-2629
- Maid of Norway**, Margaret, queen of Scotland, 3-770, 12-3136
- Maid of Orleans**: see Joan of Arc
- Maid of Saragossa**, heroism, 8-1953
- "Maid of Honor,"** picture, by Velasquez, 17-4597
see also Menifias, Las
- Maid-servants**, the three, 8-2065
- Mail-bag**: see Post-Office, work of
- Mail-car**, on train, 13-3409
- Mails**, of the United States, 6-1394, 1436-37
see also Post-Office
- Mail-train**, for post, 13-3412
- Maine**, admission of, 7-1838; 13-3490
and sparrows, 9-2221
and the pines, 21-5430, 5431
boundary of, 13-3491
- Maine**, maps of, 9-2384
author in, 18-4802
early visits to, 3-553
flower of, 22-5816
game from, 24-6380, 6382
history of, 4-894
holidays in, 17-4470
Maine, ship, 8-2154
- Main River**, in Germany, 10-2598
- Mainz**, and Gutenberg, 14-3608-12
German town, 11-2768
legend of, 16-4239
- Maires**, of France, 9-2425
- Maison du Roi**, in Brussels, 14-3549
- Maisonnette, Sieur de**, status of, 5-1279
- Maize**, and Peruvians, 17-4506, 4510
cut of stem, 9-2333
ear of, 11-2747, 2949
in Hungary, 21-5655
see also Indian corn
- Malacca**, porcupine of, 3-681
- Malachite**, mineral, 20-5332
- Malachy**, high king of Ireland, 21-5552
- Malamute**, a sledge dog, 15-4061; 24-6324
- Malapterus**, a fish, 10-2483
- Malaria**, cause of, 6-1432; 7-1805, 12-3199, 3201-02, 22-5893; 24-6368
effect of, 17-4587
in West Africa, 22-5723
- Malay Archipelago**, animals in, 3-802; 4-1074
explorations of, 4-870
- Malay Peninsula**, in Further India, 8-1930
- Malays**, in the Philippines, 8-2152
- Malays**, kind of fowl, 6-1557
- Malaysia**, monkeys in, 22-5813
- Malbone, Edward**, miniature painter, 16-4218
- "Malbrough s'en va-t-en guerre,"** old song, 14-3772
- Malcolm**, Scottish prince, 5-1299
- Malcolm III, Canmore**, king of Scots, 12-3133
- Malden**, P. O. sh. at, 12-3009
- Malcasta**, character in "Fairie Queene," 3-701
- Malcites**, Indian tribes, 11-2751
- Malice**, Mr., character in "Pilgrim's Progress," 5-1183
- Malines**, Belgian town, 14-3512
- Mall**, in Washington, 7-1692
- Mallard**, a wild duck, 6-1564
- Mallet, David**, Scottish poet, 3-518; 14-3766
- Mallet**, of Croquet, 17-1455
- Mallow**, a plant, 17-1348
- Malope**, a plant, 20-5234
- Malory, Sir Thomas**, English author, 15-3911
- Malpeque**, oysters of, 15-3956
- Malpighi**, Italian physician, 18-1631
- Malplaquet**, battle of, 10-2560
- Malta**, island of, 11-2801, 20-5200
- Malvoisin, Philip de**, character in "Ivanhoe," 7-1664
- Mamelukes**, in Egypt, 9-2286, 11-2940, 16-1302, 1304
- Mamillius, Prince**, Shakespearian character, 3-563
- Mamma**, udder of a cow, 11-2827
- Mammals**, family of animals, 3-671-72, 801; 11-2830, 14-3668
- Mammon**, character in "Fairie Queen," 3-700
- Mammoth**, prehistoric animal, 1-50, 206, 11-2914, 14-3668, 15-804, 23-5994, 6002
- Mammoth Cave**, of United States, 5-1305; 10-2615
of Western Australia, 21-5472
- Man**, a mammal, 3-671-72, 675
and his negro servant, 18-1867
by the secret shore, 16-4084
descent of, 14-3663, 3668
eye of a, 16-4259
falling in shaft, 19-4974
getting thirty-two cents from, 16-4087
great man on a little island, 10-2523
increase of stature, 11-2785
old man and his three sons, 12-3096
portrait by Rembrandt, 17-4591
presents for a, 19-4926
rate of breathing of, 7-1651
search for a happy, 22-5771
stepping from moving train, 15-4024
strength of, 16-4273
talk of, 15-1023
use of fingers, 14-3600
who broke the news, 24-6291
who carried death, 15-3823
who disappeared, 5-1150
who gave away, 9-2176
who knew no fear, 1-137
who preached happiness, 17-4384

GENERAL INDEX

- Margaret Beaufort, mother of Henry VII, 4-455
 Margaret Island, in Budapest, 21-5654
 Margaret, of Anjou, queen of England, 3-173-77
 Margate, pier, 10-2488
 Margrave, Andreas Sigismund, and beet sugar, 3-708
 Margrave, 10-2560
 see also Director
 Marguerites, arrangement of 3-(2)
 paper, 18-4198
 Marhaus, Sir Knight, and Tristram 13-3282
 Maria, queen of Portugal, and Brazil 20-5370
 Maria, Lady, character in "The Virginians" 18-3422
 Marian, the Maid, 10-2629
 Mariana, Shakespearian character, 3-562
 Maria Theresa, empress of Austria, and Mozart, 18-3290
 and Silesia, 10-2593; 17-4253
 appeal to Hungary, 2-5652
 claiming the throne, 11-2897
 reign of, 10-2861 2594, 2596-11-2904-17-4554
 Maria, Princess, character in "Ciofate! and the Heart" 18-4070
 Marie Antoinette, queen of France and carp, 10-2706
 and Mozart, 12-1290
 and Paris 21-5536
 and Revolution, 8-2073; 9-2279 18-4099, 4102-04, 4106
 death of, 10-2561
 sacrifice of, 5-1187
 sang "Malbrough," 14-9772
 Marie de Medici, queen of France 8-2074
 Marie Louise, empress of France, 2-140
 Marietta, name of, 7-1814
 Marigolds, flower, 3-732; 6-1519
 Maria, Prince, 5-1152
 Marine Corps, and Annapolis 18-4742
 Marinell, character in "Faerie Queen" 3-701
 "Marines of England," by Campbell, 14-3768
 Marion, Francis, during Revolution 4-1001, 1006
 Marionette, living, 9-2261
 Mariposa Grove, of big trees, 4-915
 Maritime Provinces, of Canada, 20-5276 21-7544
 oysters of, 18-3956-57
 trees of, 14-3733-34
 see also Canada
 Maritima River, plain or valley of the, 12-3185, 13-2242
 Marius (Caius), Roman general, 2-479 20-1275
 Marjorie, and her pony, 17-4358
 in story, 2-505
 Mark, Saint, body recovered, 5-1167
 mosaic picture of, 12-3079
 Mark, king of Cornwall character in "Tristram of Lyonesse," 12-3282
 white, on nails, 18-4274
 Mark Stacy, his painting of a Meeting of Parrots, 7-1755
 Mark Antony, and Cleopatra, 23-5786
 see also Antony Mark
 Marketa, South American, 18-4605
 Markham, Edwin, poem, see Poetry Index
 Maryland, location of, 9-271
 Mark, Russell's: see Line, Plimssoll's
 Marksmanship, of Americans, 6-1400
 "Mark Twain" see Clemens, Samuel Lang-horne
 Marlborough, Duchess of, mourned in the Abbey, 18-4686
 Marlborough (John Churchill), First Duke of, and Blenheim, 3-743
 favorite motto 4-1042
 wars of, 8-1114, 10-2560
 Marlborough, province of New Zealand 6-1490
 Marlborough House, in London, 8-1258
 Marley, ghost of, in "Christmas Carol," 3-1196-97, 2199
 Marline, a ship's rope, 18-4620
 Marlinpike, of ship, 18-4619-20
 Marlowe, Christopher, English dramatist, 9-2237; 21-5488
 poems: see Poetry Index
 Marlowe, Kit, dramatist, 21-5584
 Marmalade, oranges for, 3-653
 "Marmion," by Scott, 9-2323
 Marmonet (Auguste F. L.), French marshal, 17-4366
 Marmonet, sea of, 12-2155-59
 Marmonet, tiny monkey, 8-621-32
 Marmoset, an animal, 8-679, 682; 21-5675-76
 winter sleep of, 24-6375
 see also Prairie-dog
 Mars River, in France, 8-2412, 10-2860
 Mars, Fabianus Vespilinus, and Virgil
 Marsons, of Jamaica, 23-6046
 Marpesa, the choice of, 6-1516
 Marpesa-sphinx, 12-3361
 Marquand, Henry, portrait by Sargent, 18-4266
 Marquette, Father Jacques, and the Indians, 18-6111, 6117
 explored America, 2-278; 4-894, 22-5426
 statue of, 7-1686
 Marram-grass, of sea-beach, 12-3063
 Marriage, of date-palms, 23-6192
 "Marriage Feast at Cana," painted by Veronese 8-1179
 "Marriage of Figaro," by Mozart, 13-3290
 Marrow, of bones, 6-1430
 Marryat, Captain Frederick, tales of, 8-2025
 Mars, Roman war-god, 1-92; 17-4523
 Mars (planet), and astrologers 8-1360
 appearance of earth to, 11-2802
 atmosphere of, 14-3680, 18-5026, 20-6166
 changes on, 23-5991
 communication with, 12-4116
 deserts on, 12-3125
 freezing on, 17-4535
 life on, 13-3512
 men on, 13-3512
 moons of, 9-2286
 mountains on, 13-3251
 radiation of heat from, 10-4211
 story of, 1-140, 144, 4-919, 958, 1031, 8-1963, 1967, 9-2249, 2389-92
 volcanoes on, 13-3251
 water on, 12-7032, 3125, 13-3388, 3512
 see also Canals
 Marsden, Samuel, missionary to New Zealand 6-1456
 Marseillais, ship in "Twenty Thousand Leagues," 18-5063
 see also Avenger
 "Marseillaise," national anthem of France, 5-1111; 9-2281, 2284 14-3765
 Marseilles, battalion of, 9-2415, 14-3765
 French port, 9-2418, 2421, 20-620-
 Garde of, 9-2282
 Marshal Forward: see Blücher, General
 Marshall, Chief Justice, college of, 17-4544
 Marsh-buck, and young, 21-5665
 Marsh-elder, a plant, 20-5215, 5216
 Marshes, birds of the, 9-2341
 flower, of the, 19-5085
 Marshfield, home of Webster 10-2442
 Marsh-gas, carbon compound 6-1417, 7-1888-89, 14-3569
 smells of, 18-4636
 see also Carbon
 Marsh-hawk, a bird, 12-3157
 Marsh-hens: see Mud hens
 Marsh-mallow, a plant, 20-5212 5215
 Marsh-mallows, making, 14-3553
 Marsh-marigold, a flower, 11-2882 18-3615-16, 19-5088-87
 Marsh-pennywort, a plant 19-5092
 Marsh-samphire, a plant, 20-5218
 Marsh-trefoil, a plant, 19-5084
 see also Buck-bean
 Marsh-wren, nest of, 22-5750
 Marston Moor, battle of, 7-1858, 1865
 Marsupials, pouched animals, 4-574, 14-3668, 21-5664
 Marten, a fur-animal, 3-804, 19-5074
 Martha's Vineyard, glacial moraine, 1-14
 Martin, character in "Tom Brown's School-days," 16-4141
 Martin V, pope of Rome and Fabriano, 19-5100
 Martin, Mrs. Attwood, M.: see Martin, George Madden
 Martin, George Madden, American writer, 2-2103
 Martin, Helen M., American writer, 2-2102
 Martin, Homer D., American painter, 18-4247, 4248, 4250
 Martin, Jenny, tale of, 23-6129
 "Martin Chuzzlewit," by Dickens, 10-2459, 2677
 Martinique, island of, 3-6048
 Martino, Giovanni de, Italian Sculptor, 5-1172
 Martins, birds, 3-3215-16, 18-3461
 nest of, 22-5753
 see also House-martin, etc.
 Martin's Creek Viaduct, of concrete, 10-4245
 Martynia, seed pods of, 15-3895
 Martyr, Peter, companion of Isabella, 10-2445
 Martyr, meaning of, 2-1943
 of the Reformation, 19-5093

GENERAL INDEX

- Marvell, Andrew**, and Milton, 22-5675, 5678
English poet, 18-4399
- Marx, Karl**, socialist, 24-6338
- Mary**, and Rob Singleton, 18-4784
- Mary**, character in "Cricket on the Hearth," 9-2302
- Mary**, mother of Jesus, 2-536, 20-5280
- Mary**, queen of England, wife of George V, in India, 7-1712
- Mary I**, queen of England, and Calais, 21-5533
married Philip II, 13-3312, 22-5819
physician of, 18-4650
reign of, 4-859, 19-5094
- Mary II**, queen of England, wife of William of Orange, 4-1043, 14-3547
- Mary**, queen of France, 21-5540
- Mary, Duchess**, wife of Maximilian, 14-3544
- Mary, of Lorraine**, regent of Scotland, 12-3112
- Mary, of Modena**, queen of England, 4-1043
- Mary, Princess**, daughter of Charles I, 4-1038, 7-1856
- Mary, Princess**, of Portugal, married Philip II, 22-5849
- "**Mary Barton**," by Gaskell, 10-2623
- Mary-buds**, flowers, 11-2882
- Maryland**, approved Constitution, 6-1392
during Civil War, 8-2044, 2016, 2048
flower of, 22-5816
history of, 23-5957
Indians of, 1-24
name of, 2-528
no state university, 17-4570
- "**Mary Magdalen**," by Ribbel, 13-3395
- "**Mary Magdalene**," carving by Donatello, 11-2796
- "**Maryland, My Maryland**," by Randall, 12-3053
- Mary Stuart**, queen of Scots, and Philip II, 22-5850
Elizabeth and 9-frontis
in "The Abbot," 6-1496
letters of, 15-3500
reign of, 4-860, 1041, 9-2072; 12-3132, 3141-42
- Marzipan**, candies of, 14-3552
for Easter cake, 13-3424
- Masaccio**, Italian painter, 17-4590, 4592
- Masefield, John**, English writer, 23-6940
- Masagne family**, Venetian sculptors, 5-1172
- Mashie**, a golf-club, 12-3211, 3213
- Mask**, fox and the, 9-2317
in baseball, 20-5218
Indian, 20-5328
- Maskelyne, Nevil**, English astronomer, 7-1682
- Maskinonge**, a fish, 10-2701, 2706
- Maskoki**, Indian stock, 1-21
- Mason, James M.**, Confederate commissioner, 8-2048
- Mason, John**, and New Hampshire, 2-533
- Mason, Joseph**, sons of, 13-3484
- Mason-bee**, an insect, 11-2850
- Masons**, birds as, 22-5752
- Mason-spider**: see Trap-door spider
- Mason-wasp**, an insect, 11-2860
- Masques**, at Kenilworth, 21-5182, 5580
of Milton, 22-5674
- Mass**, and heat, 13-3707
measurement of, 14-3671, 3673, 15-3825
of things, 12-3226
what it is, 3-566
- Mass**, of John, 13-3256
of Palestine, 13-3285
- Massachusetts**, and New Hampshire, 2-533
and Northwest Territory, 7-1834
approved Constitution, 6-1392
boots and shoes in, 10-2686
colonial schools in, 4-960
cotton manufactures of, 10-2681, 19-4886
cutlery in, 18-1802
flag of, 21-5492
flower of, 22-5816
gems from, 24-6380
glass in, 5-1264
grant to, 4-895
gypsy moth in, 12-3195
holidays of, 17-4470
insects of, 13-3307
iron in, 22-5688
no state university, 17-4570
presidents from, 7-1840; 9-2382
refused to pay taxes, 4-948
shoes in, 12-3103
visited by Leib, 2-271
- Massachusetts Bay**, lighthouse in, 3-749
- Massachusetts Bay Colony**, and Harvard, 17-4566
early history, 2-526-27, 532
John Winthrop, governor of, 10-2455
- Massachusetts Hall**, at Harvard University, 17-4566
- Massachusetts Institute of Technology**, 17-4567
- Masséna (André)**, French marshal, 17-4366
- Massif, Central**, highlands in France, 9-2416, 2420
- Massilia**: see Marseilles
- "**Master Humphrey's Clock**," by Dickens, 10-2159
- "**Masterman Ready**," by Marryat, 8-2025
- "**Master of the World**," see Alexander the Great
- Mastodon**, prehistoric animal, 1-14, 50, 4-1016; 11-2919, 14-3687-68, 20-5322
- Masts**, of ship, 15-3959; 18-4619-20
pine-trees for ship's, 4-994
see also Lattice-masts
- Mat**, a wool, 10-2519
- Matador**, domino-games, 15-4044
- Matawan Creek**, sharks in, 10-2478
- Matchbox**, tick with, 2-382
- Matches**, a box of, 1-111, 14-3639
and fire, 17-4389, 22-5757, 5762
figures made of wax, 2-190
flaming of, 19-1875
for out-doors, 15-1045
in bird's nest, 22-5766
making, 9-2427-30
problems concerning, 7-1855
striking of, 3-809-10
sulphur in, 5-1311
ticks with, 3-731
why blown out, 1-170
- Match-stand**, modeling a, 23-6167
- Materialism**, meaning of, 17-4483
- Materials**, raw, 10-2681
- Mathewson**, great pitcher, 20-5250
- Matilda**, daughter of Henry I, 3-590, 592
- Matilda**, queen of England: see Maud
- "**Matilda Wrede**," by Lagerlof, 20-5316
- Matrimony**, charade, 9-2265
- Matrix**, of linotype, 4-951
of talking-machine, 21-5601
- Mattathias**, a Jew, 1-127
- Mattawa**, reached, 3-556
- Matter**, and heat, 16-4085
changed by movement, 13-3425
not found on earth, 19-5021
of poisoned wound, etc., 6-4460
of the brain, 14-3689, 3692
properties of, 14-3775
the grey, 18-4691
what it is, 4-851
why solid or liquid, 5-1192
- Matterhorn**, mountain in Alps, 12-2980, 2982
- Matthew**, apostle in Ethiopia, 9-2351
- Matthias I**, king of Hungary, etc., 11-2898, 2901
21-5556, 5658
- Mathison, Friedrich**, German poet, 14-3712
- Mattress**, for out-doors, 15-4045
- Maud**, queen of England, life of, 3-590, 12-3131
- "**Maud Müller**," by Whittier, 6-1616
- Mauley, Sir Edward**, in "The Black Dwarf," 6-1497
- Mauretania**, ship, 10-2490
- Maurice**, and the Netherlands, 14-3516
- Maurice**, in "Canterbury Tales," 2-495
- Mauritius**, birds of, 1-53, 6-1502, 1508
- Mauritshuis**, museum in the Hague, 14-3518
- Maury, Matthew F.**, and Annapolis, 18-4737
- Maury Hall**, at Annapolis, 18-4713
- Mause Headrigg**, character in "Old Mortality," 7-1777
- Mausoleum**, a tomb, 20-5207
- Mausolus**, king of Caria, tomb of, 20-5207
- Mauve**, first coal-tar dye, 10-2539
- Mawson, Dr. Douglas**, arctic explorer, 21-5466
- Maxim, Sir Miram**, and flying-machine, 1-174
- Maximian**, emperor of Rome, and Constantius 20-5383
- Maximilian**, of Austria, emperor of Mexico, 17-4402
and Mexico, 17-4396
- Maximilian I**, duke of Bavaria, 10-2558
- Maximilian I**, Holy Roman Emperor, 10-2555, 11-2898; 14-3544
- Maximinus**, emperor of Rome, 4-1026
- Maxwell, Clerk**, and color-printing, 14-3615
- Maxwell, James Clerk**, Scotch mathematician and electrician, 8-2176
- Maxwellton**, and Annie Laurie, 14-3769

GENERAL INDEX

- May**, birthstone for, 24-6377
 flower of the, 16-4134; see also Hawthorn
 name of, 17-1533
Mayas, natives of Central America, 17-4400
May-beetle: see June-bug
Maybloom, Princess, in "Fairyfoot," 15-4049
Mayence: see Mainz
Mayflower, a plant, 11-2878, 2884
 state flower, 22-5816
 see also Trailing-arbutus
Mayflower, ship, 2-523, 526, 4-959, 1036
Mayflower, yacht, 21-5491
May-fly, an insect, 13-3301, 3305
Mayhew, Dr., and Mary Benton, 8-1956
Mayhew, Thomas, cabinet-maker, 23-6174
Maylie, Mrs., character in "Oliver Twist,"
 10-2562
Maylie, Rose, character in "Oliver Twist,"
 10-2565
Maynard, John, pilot, 14-3739
Mayo, Charles E., American surgeon, 18-4634
Mayo, William J., American surgeon, 18-4634
Mayon, volcano in Philippines, 8-2153
May-pinks: see May-flower
Maypole Inn, in "Barnaby Rudge," 11-2777
May-rose: see Guelder-rose
Mays, Boston family, 8-2099
Mayaguez, seaport, 16-4301
Mase, goat in a, 21-5152
Masini, Joseph, Italian patriot, 12-3086,
 16-4155, 4158
Meads, Gen. George G., and West Point,
 18-4735
 at Gettysburg, 8-2050-51
Meadow-barley, a grass, 5-1347
"Meadow Grass", by Brown, 8-2101
Meadow-grasses, 5-1347, 1319, 1351: 12-3059
Meadow-lark, a bird, 13-3159
Meadow-rue, alpine, 18-4756, 4758
 various, 19-5086-87
Meadow-sweet, a plant, 16-4121, 19-4949, 4952
 see also Spiraea
Meadow-toadstool, 19-face 1882
Meanwell, Margery, "Goody Two Shoes,"
 20-5179
Meanwell, Tommy, in "Goody Two Shoes,"
 20-5179
"Measure for Measure", by Shakespeare, 3-561
Measurement, and science, 14-3671
 by shadows, 9-2208
 of strain, 23-6083
Measures, and their equivalents, 1-111
 systems of, 14-3672-73
 feet, cooking of, 4-1082; 10-2578
 food-value of, 11-2727, 13-3271
 frozen, 6-1376
 in New Zealand, 6-1190
 poisoning by, 19-5033
Meat-extract, food value of, 12-3183
Meath, kingdom of, 21-5551
Meat-industry, in Chicago, 10-2679, 2684
Mecca, Moslems and, 23-6105
Meemager to, 15-3858; 16-4298
 shrine of, 12-3029-30
Mecklenburg Co., N. C., resolutions of, 4-1000
Mecklenburg Declaration of Independence,
 anniversary celebrated, 17-4470
Medal, for the Armada victory, 4-862
Medea, princess, 1-204
Medes, history of, 7-1819; 19-4960, 4968, 4970;
 20-5145
Media, Asiatic country, 20-5145
Medici, Italian family of, 12-3080
Medici, tombs, by Michael Angelo, 16-4173, 4181
Medici, Catherine de, queen of France and
 Huguenots, 8-2072, 2074-75
Medici, Lorenzo de, ruler of Florence, 11-2792;
 12-3192
 statue, by Michael Angelo, 16-4181; 19-5079
Medicine, from Central America, 17-4406
 from coal-tar, 2-416
 given in milk, 11-2828
 in Colonial days, 4-966
 in United States, 10-2686
 why nasty, 12-3143
Medicine-dance, of Winnebago, 7-1841
Medicine Hat, Canadian town, 21-5612
Medicine-men, of Indians, 1-18; 11-2781
Medicks, plants, 16-4135
Medina, character in "Færie Queene," 3-699
Medina, pilgrimages to, 18-3858
Meditations, of Marcus Aurelius, 2-541
Mediterranean Sea, animals in, 4-1075
 as boundary, 15-3855
 countries along, 1-151; 2-650; 14-3742
Mediterranean Sea, sponges of, 16-4269
Medium, air and water as a, 14-3568
 conveys sound, 17-4679
Medusa, jelly-fishes, 9-2413
 see also Jelly-fish
Meerut, writing at, 18-4799-4800
"Meeting of Parrots", by Marks 7-1755
Meetings, Mothers', 12-3220
Meg, character in "The Chimes:" see
 Margaret
 character in "Little Women," 8-2098-99;
 20-5169
Megalosaurus, fossil animal, 1-54
Megatherium, fossil animal, 14-3668
Meg Merrilies, character in "Guy Mannering,"
 8-1626
Mega, Stand-up, a game, 19-5132
Melringen, in Switzerland, 22-5846
Meissen, porcelain of, 11-2763-64; 17-4540
Meissonier (Jean L. E.), French artist, and
 motion-pictures, 20-5136
 his picture of battle of Friedland, 9-2285
"Meistersinger", opera, by Wagner, 13-3293,
 3394
Melanesia, island of, 6-1492
Melbourne, capital of Victoria, 6-1370
Melchers, Carl, American painter, 16-1252
Melchus: see Patrick, St.
Mellie, a grass, 12-3056
Melliot, a plant, 16-1211
Mell, Mr., character in "David Copperfield,"
 11-2862
Mellville, David, and gas-lighting, 3-677
Melodies, Negro, 12-3051
Melodrama, anagram from, 19-5037, 5133
Melody, meaning of, 19-4903
Melons, island of, 16-1172
Melrose Abbey, and Abbotford, 6-1501
Melting-pot, America is, 10-2690
 see also Crucible
Membranes, mucous, 8-2171, 9-2363-64, 2366-67
 of the ear, 15-3912, 3917
 of the skull, 10-2571
Memling, Hans, character in "Cloister and the
 Hearth," 16-4073
Memnon, Egyptian statues, 16-4175
Memoirs, of General Grant, 3-789
Memorial Day, celebration of, 17-4165
Memory, and thinking, 19-5080
 habit of, 10-2173
 how to remember, 18-4856
 of dog, 5-1164
 pleasures of, 4-823
 power of, 19-4996
 training, 19-5021
Memory, Land of, in "Blue Bird," 22-5836-37
Memphis, built by Menes, 19-4960
 palms at, 23-6185
Memphis, city in Tennessee, 23-5962
Men, and pain, 18-4692
 how did men learn to talk, 5-1286
 problem concerning lost, 3-624
 puzzle-picture of famous, 18-4810
 rocks that look like, 5-1311
 who gave us light, 3-663
 who made the world known, 1-59
 see also Seven Wise Men of Greece . Wise
 Men of the East
Menagerie-pace, holding a, 18-4612
Menai Straits, bridge over, 1-33
Men and Women, Book of: see Tables of
 Contents
Menofus, and his mother, 21-5479
Mendel, studies of, 22-5894
Mendelssohn, Moses, Jewish leader, 24-6336
Mendelssohn-Bartholdy (Jakob L. F.), German
 composer, 13-3292, 3379; 24-6335-36
Mending, lessons in, 14-3555; 16-4294
Mendoza, Don Pedro de, Spanish explorer, and
 Buenos Ayres, 17-4512, 4513
Menelaus, king of Sparta, 1-73; 7-1710
Menendez (de Aviles, Pedro), founded St.
 Augustine, 2-276
Menes, a king of Egypt, 18-4846; 19-4960
Men-Kau-Sa, king of Egypt, 18-4846-48
Mennonites, religious sect, 8-2102
Mentone, caves near, 11-2735
Merak, a star, 10-2639-41, 2645
Mercurator: see Kramer, Gerhard
Merced, character in "Count of Monte Cristo,"
 16-4315; 17-4431
Merchant, in "Canterbury Tales," 15-3939
Merchant-navy, German, 11-2771
"Merchant of Venice", by Shakespeare, 2-330,
 21-5579, 5586

GENERAL INDEX

- Merchants, Don Quixote challenges the, 4-904**
Merda, kingdom of, 2-466
Mercury, a Greek god, 4-1051; 17-4534
 and the woodman, 11-2963
Mercury, element, and hands, 14-3684
 and liquid air, 16-4085
 as measure for air-pressure, 15-3978
 behavior in tube, 19-4877
 chloride of, 7-1696
 element, 1-164, 170; 3-566; 5-1315, 1318; 6-1570;
 7-1698, 1887
 for barometer, 3-812; 8-2136
 for mirrors, 5-1268
 in Brazil, 20-5371
 in thermometers, 8-1987; 17-4395
 iron floats on, 14-3775
 production of, 10-2680
 specific gravity of, 15-3828
Mercury, planet, story of, 1-140, 148; 9-2249,
2388-89; 11-2804
Mercurio, Shakespearean character, 2-448
Meroy, character in "Martin Chuzzlewit,"
10-3673
Meredith, George, British author, 9-2329;
16-4083
Meredith, William T., poems: see Poetry Index
Mergenthaler, Ottmar, invented linotype, 4-947;
11-3718
Merida, Spanish city, 13-3338
Meridians, of longitude, 7-1766
Merino, a kind of sheep, 2-407, 408
Merkat, of Arabs, 23-6102
"Merlin," by Immermann, 13-3398
Merlin, a wizard, 3-700, 719; 4-882-84; 19-5119
Merlin, a falcon, 7-1899-1900
Mermaids, imaginary sea-creatures, 1-221;
4-1073-74
 the little mermaid, 6-1478
Mermaid Tavern, and Shakespeare, 21-5672
Merman, imaginary sea-creature, 1-221
 Mona and the forsaken, 4-977
Merope, a Peliade, 13-3374
Merovingians, in Paris, 21-5534
Merriam, Florence, on the Tanager, 9-2145
Merrimac, ship, the first iron-clad, 8-2018-49,
2051; 23-6203
Merrimac River, a boundary, 2-526
Merry-go-round, for garden, 23-6003
 outside moves faster, 3-813
Merrywind, the little fiddler, 17-4111
Mertens, a servant, 5-1151
Merv, town in Asia, 15-3924
Mervyn, Arthur, character in "Guy Manner-
ing," 6-1627
Mervyn Hall, in "Guy Mannerling," 6-1627
Messaba Range, iron in, 22-5688
Messas, of America, 4-face 851
Mesmerizing: see Hypnotizing
Mesophytes, medium plants, 19-5085
Mesopotamia, history of, 15-3855-56, 3862;
19-4957, 1960
Mesquite, a tree, 14-3625, 21-5435
Messages, carried by pigeons, 9-2217, 2419
 flashing at night, 21-5518
 of Indians, 9-2368
 prehistoric, 13-3179
Messala, character in "Ben Hur," 20-5257
Messalina, Roman empress, 2-538
Messaline, Shakespearean character, 2-445
Mess Hall, at West Point, 18-4736
"Messiah," by Handel, 13-3285
Messina, earthquake of, 13-3252; 13-4694
 Italian city, 12-3086
Messina, Strait of, near Italy, 18-4811
Messus, and Mowgli, 21-5469
Metacarpus, bones of the hand, 16-4200
 see also Knuckles
Metacomet: see King Philip
Metals, age of, 3-817
 allow light to pass, 15-3907
 alloys of, 7-1888
 and the earth, 16-4276
 as conductors of heat, 16-4238
 compounds of, 7-1813, 1815
 conductors of, 12-3148
 fatigue of, 15-4023
 for mirrors, 5-1263, 1268
 French manufactures of, 9-2420
 furnished by colonies, 4-993
 heat changes, 10-2653
 in Rumania, 13-3240
 in Spain, 13-3347
 in stars, 11-2741
 in sun, 8-2094
 liquid: see Mercury
Metals, Phoenician workers in, 20-3200
 poisoning of, 21-5516
 production of, 10-2680
 salts of, for adulterating, 7-1829
 use of, by Indians, 1-16-17
 what they are, 5-1314, 1315
Metatarsus, bones of the foot, 16-4201
Metcalfe, Sir Charles, governor of Canada,
8-1274
Meteorites, and moon, 23-6215
 fall on the earth, 14-3677
 iron in, 22-5687
 one called Caille Aerolite, 10-2546
 origin of, 1-143; 8-1966, 1948
 see also Meteors, Shooting-stars
Meteorology, science of the weather, 10-2536;
23-5989
Meteors, or falling-stars, 1-149; 7-1881-82;
10-2541, 2545; 14-3677; 23-5989
 on earth, 5-1160
Meters, for gas, 2-417-18
Methodists, a religious sect, 8-2043; 14-3733
 in Canada, 21-5407
Methodius, Greek monk, 11-2902
Methven, battle of, 12-3135
Methyl-alcohol, added to ordinary alcohol,
7-1889
Metre, meaning of, 14-3672
Metropolitan Aid Society, and criminals,
22-5942
Metropolitan Life Insurance Building, in New
York, 19-5008, 5010, 5013
Metropolitan Life Insurance Company, clock of,
6-1538
Metropolitan Museum of Art, in New York,
16-4220; 17-4590-91; 19-5016-18
Metz, bishopric of, 10-2559
 surrender, 10-2598
Meunier, Constantin, Belgian sculptor, 16-4171,
4181
Meuse, river in Europe, 14-3539-40
Mexican War, and standard, 21-5494
 and West Pointers, 18-4736
 history of, 7-1842-44; 13-3492; 17-4402
Mexico, and Texas, 7-1840
 animals of, 2-287; 5-1211
 ants in, 11-2972
 archaeology of, 20-5326, 5328
 Aztecs in, 1-19
 birds of, 8-2342-45
 boll-weevil in, 12-3205
 buildings of, 17-4403
 cathedral of, 17-4403
 French in, 9-2290, 10-2443
 fruit in, 3-650
 gems from, 24-6380, 6382-83
 gold of, 20-5318
 history of, 2-274, 521; 4-887, 900; 13-3342,
 3346; 16-4078; 17-4396-97
 map of, 17-4399
 metals in, 10-2680
 printing in, 14-3612
 rubber in, 22-5793
 sisal hemp in, 15-4003
 trouble with United States, 9-2380; 13-3495
 see also Mexican War
Mexico, City of, capture of, 2-274; 7-1844-45
 history, 17-4402
Mexico, Gulf of, description, 1-13; 17-4397
Meyerbeer, Giacomo, German composer, 13-3294;
24-6336
Mestizo, South American half-breeds, 18-4606,
4608
Mica, a mineral, 10-2682; 22-5887
Mica-schist, a variety of rock, 20-5350
Micawber, Mr., character in "David Copper-
field," 9-2320; 11-2866
Mice, and the cat, 17-4346
 eat acorns, 15-3896
 eaten by ants, 11-2974
 turned to horses, 3-798
 various kinds of, 3-806-08
Michael, czar of Russia, 14-3724
Michael, in "Paradise Lost," 22-5680
Michael, Prince, character in "The Land of
Youth," 8-2061
Michael Angelo, and St. Peter's, 12-3082
 comments of, 11-2786, 2794, 2796
 Italian sculptor, 8-1178; 11-2797; 16-4173,
 4181; 17-4580, 4593; 22-5925, 5933
 statue of, 18-4672
 work of, 19-5079, 5100-05
"Michael Kohlhaas," by Kleist, 13-3296
Michaelmas-daisies, cultivation of, 3-616;
6-1519

GENERAL INDEX

- Michigan**, admission of, 7-1840; 13-3491
 flower of, 22-5816
 fruit in, 3-649, 651, 9-2386
 history of, 7-1834, 1838
 manufactures of, 10-2686
 metals of, 10-2678
 peaches in, 3-649
 timber in, 9-2387
Michigan Channel, of the St. Mary's River, 23-6126
Michigan Lake, in America, 1-11, 2-278 22-5826; 23-6112-13, 6120
 rescue in, 11-2815
Michigan University, at Ann Arbor, 17-4571
Michmas, Indian tribes, 11-2784
Microbes, and blood-cells, 6-1430, 1459-61, 1464
 and fruit, 15-3901
 and nitrogen compounds, 13-3351
 and nose, 7-1648; 24-6232
 dangerous, 24-6361
 discovery of, 18-4634
 effect of heat and cold on, 10-4088
 filtered out by nose, 7-1648
 in milk, 4-905, 11-2831, 21-5638
 in mouth, 8-2079
 killed by carbolic acid, 10-2539
 killed by cooking, 4-1082
 kinds and effects, 1-44, 188; 3-805, 4-817, 905, 914, 1019
 life of, 13-3389
 microbes on, 10-4811
 of a cold, 10-2540
 of rotting wood, 8-2008
 of tuberculosis, 11-2802
 poisoned in bowel, 8-2367
 ripen cream, 17-4372
 use nitrogen, 5-1248
Microphone, use of, 22-5860; 24-6317
Microscope, meaning of, 11-2738
 story of the, 9-2331
 use of, 12-2998, 17-4374
Midas, king of Phrygia, gold-legends about, 20-5318, 22-5682
Middle Ages, locks of, 24-6358
 spoons of, 18-4805
Middlesex, English county, 2-465
Midgard, legendary serpent, 1-95
Midges, injurious insects, 12-3199
Midnight Sun, 14-3651, 3661
Midnight Sun, a boat, 19-5073
Midshipman, anagram from, 19-5037, 5133
 and Annapolis, 18-4737, 4742
Midsummer Day, date of, 14-3708
Midsummer-Men; see **Sedum**
"Midsummer Night's Dream", by Shakespeare, 2-327; 21-5584
Midway Island, American, 8-2147, 2156
Mignonette, a flower, 1-249, 17-4475
Migration, of birds, 9-518; 9-2214
Mikron, a measure, 22-5814
Milan, Duchy of, 10-2556; 22-5850
Milan, Duke of, Shakespearean character, 2-329; 3-839
Milan, and St. Ambrose, 15-4030-31
 brave cardinal of, 5-1207
 Italian city, 12-3078, 3084, 3086
 presses in, 14-3610
Mildenhall, Sir John, ambassador to India, 7-1715
Mildew, plant disease, 14-3786
 stains of, 21-5644
Miles, Alfred H., poems: see **Poetry Index**
Miles, General Nelson A., at Porto Rico, 9-2154
Miles, problem concerning number of, 5-1365
Millford Sound, in New Zealand, 6-1490
Military College, at Kingston, 23-6122
Milk, as a food, 11-2727, 2827; 13-3274-75
 as an invisible ink, 8-1302
 boiling, 16-4273
 boy who found deer's, 23-6028
 character in "Blue Bird," 22-5836
 condensed, in Switzerland, 12-2992
 cooking of, 4-1082
 crust on heated, 17-4585
 disease carried in, 11-2801
 divine, 12-4785
 fat in, 17-4372
 how does a cow make, 6-1587
 in the United States, 10-2678
 iron in, 6-1481
 Latin name for, 9-2367
 mammals feed young on, 14-3668
 not used in China, 8-406
 of coconut, 8-1998, 2069
 of goats, 8-410
Milk, problem of measuring, 1-256
 reaction of, 7-1815
 salt in, 5-1315
 souring of, 4-821, 906-07, 913; 18-4032; 21-5638; 24-6264
 specific gravity of, 18-3827-29
 stains of, 20-5177
 water in, 5-1192-93
 watering, 15-3829
 see also **Lactose**, **Microbes**
Milkmaid: see **Cuckoo-flower**
Milk-sugar: see **Lactone**
Milk-thistle, a plant, 20-5229
 see also **Sow-thistle**
Milkweeds, several, 19-5092
Milky Way, of stars, 7-1880; 8-1969; 10-2640; 11-2737, 2740
Mill, John Stuart, English thinker, 16-4155, 4160
Millais, Sir John E., pictures of, 4-854, 7-1772 8-2075, 19-5079
 sketch of Thackeray, 9-2326
Miller, Emily M., poems: see **Poetry Index**
Miller, Jack, in story, 22-5709
Miller, Joaquin, American poet, 17-4463
 poems: see **Poetry Index**
Miller, Patrick, steamship for, 10-2490
Miller, Susy, in story, 22-5709
Miller, Thomas, poems: see **Poetry Index**
Miller, William, poems: see **Poetry Index**
Miller, and his pets, 15-3873
 in "Canterbury Tales," 15-3939
Millet, Frank D., American painter, 16-4250
Millet, J. F., French artist, his picture of "The Gleaners," 8-2419, 16-4221
Millet, for bread, 5-1132
Milliners, and murdered birds, 9-2340-41
Millipedes, an animal, 13-3356-57
"Mill on the Floss", by Eliot, 10-2626
Mills, Clark, American sculptor, 18-4668
Mills, Mrs., and Earl Nithsdale, 9-2235
Mills, brave maid of the mill, 12-3000
 for cotton, 18-4886
 for flour, 22-5715
 for grinding, 5-1137
 modern roller, 5-1138
 of India, 6-1633
 old couple at the mill, 11-2943
 steel-rolling: see **Steel-making**
Milne, Prof. John, student of earthquakes, 13-3254
Milnwood, in "Old Mortality," 7-1776
Milos: see **Melos**, island of
Milton, Ann, sister of John, 22-5673
Milton, Christopher, brother of John, 22-5673
Milton, John, English poet, 6-1571, 8-2012, 14-3771, 18-4599, 21-5188, 5672, 22-5673, 23-6029, 6031
 as statesman under Cromwell, 4-1039, 7-1863
 blindness of, 22-5675
 hymn written by, 8-2013, 2017
 poems: see **Poetry Index**
 portrait, 8-2017
Milton, John, Senior, 22-5673
Milton, Mary, wife of John, 22-5676
Mimnograph, for copying, 18-4821
Mimicry, protective, 12-5018, 3021 13-3445; 17-4386
 see also **Birds**, **Camouflage**, **Insects**, etc.
Minae Basin, in Nova Scotia, 1-223, 21-5514, 5547, 5530
Mind, power of, 2-648
 studies of, 16-4749
Minden, battle of, 14-3768
Minden, ship, 21-5494
Mineralogy, study of, 11-2915
Minerals, exhibit of, 20-5332
 for china painting, 17-4548
 in Rumania, 13-3240
 of Russia, 15-3798
 of the United States, 10-2678
 production of, 10-2680
Miners, in Russia, 15-3798
 of coal, 4-434
 see also **Coal-mines**, **Gold-mines**, etc.
Mimera, caterpillars, 12-3017
Minerva, a Roman goddess, 7-1710; 20-5186
Minerva Church, decorations by Lippi, 19-5102
Mines, fire in, 22-5708
 king of the golden, 4-1052
 liquid air in, 16-4086
 open-pit iron, 22-5691
Minim: see **Music**
Mining, hydraulic, 23-6095
Mining, United States Department in charge of, 6-1487

GENERAL INDEX

- Mineral**, School of: see Queen's University
Ministers, appointment of United States, 6-1436
 four wise, 13-4983
 see also under names of individual countries
Miniver, heraldic name of ermine, 13-5074
Minks, fur-animals, 13-4060; 13-5072
"Minna von Barnhelm", by Lessing, 13-3394
Minneapolis, city in Minnesota, 10-2684; 22-5071
Minnesingers, German bards, 13-3394
Minnesota, admission of, 13-3492
 flower of, 22-5816
 iron in, 10-2678; 22-5688, 5691
 lakes of, 1-14
 wheat in, 9-2386
Minnows, for bait, 10-2705-06
Minos, king of Crete, 20-5186
Minotaur, the monster, 20-5200
Minot Ledge, lighthouse on, 3-749
"Minstrel Boy to the War has Gone", song, 14-3770
Minstrels, negro, 12-3051
 Taillefer, a minstrel, 3-589
"Minstrel's Curse", by Uhland, 13-3396
Mint, of London, 14-3645
 of United States, 14-3645
 of Venice, 5-1170
 the magic, 6-1518
 what it does, 10-2653
Mint, a plant, 12-3217; 13-4136; 19-4955-56
Mint-family, of plants, 13-4660
Minto, Earl of, governor of Canada, 5-1281
Minuet, a dance, 4-963, 965
Minuit, Peter, bought Manhattan, 2-528
 governor of New Amsterdam, 2-528
Minute, marking the, 6-1546
 unit of time, 14-3672
Minute Man, a statue to, 13-4669
Miquelon, Islands of, in Atlantic, 4-900; 9-2426
Mira, a star, 10-2643
Mirabeau (Comte de), French revolutionist, 13-1099-4100, 4106
Miraflores, on Panama, 21-5596
Mirage, cause of, 12-3144-45
 explanation of, 23-6076
 of the desert, 23-6101, 6105
Miramichi River, in Canada, 1-224
Miranda, Shakespearian character, 2-329
Mirak, a star, 10-2613
Mirko, Prince, 3-723
Mirror, and Gutenberg, 14-3609
 and Japanese couple, 20-6182
 bends light-rays, 23-6217
 combing hair before, 22-5923
 for heliographing, 17-4411, 4446
 making, 6-1268
Mirrors, Gallery of, in Versailles, 21-5537
Mirrors, Hall of, 10-2599
Miser, who hated a good man, 17-4384
"Misérables", by Hugo, 20-5312
Missel-thrush, a bird, 8-2112
 egg of, 7-face 1760
Mission, furniture, 23-6177
Missionaries, and C. M. Yonge, 10-2627
 early Christian, 10-2550
 from Ireland, 21-5552
 in Oceania, 6-1492
 in Pacific Islands, 6-2150
 of Roman church, 12-3186
 to American Indians, 2-278; 4-893-94
 to Britain and Ireland, 1-212, 2-466, 470
Missionary Ridge, battle of, 2-2050
Missions, in California, 7-1846
 Spanish, 21-5416
Mississippi, admitted, 7-1836, 13-3490
 boll-weevil in, 12-3205
 capital of, 23-5966
 dams across, 23-6070
 discovery of, 7-1686
 exploration of, 3-552; 23-6112
 flower of, 22-5816
 history, 3-2377; 23-5960
 secession of, 3-2044; 13-3492; 22-5947
 Spain and the, 6-1391
 territory of, 7-1836
Mississippi River, claims to valley of, 4-894, 896, 900
 deepened, 13-3493
 description of, 23-6071
 discovery of, 2-274
 during the Civil War, 3-2047, 2050
 exploration of, 2-278, 282; 4-893
 French in valley of, 2-533
 in the United States, 1-10, 13
Mississippi Valley, crops in, 3-2884
Missouri, admission of, 7-1838; 13-3490
 and Boone, 24-6251, 6254
 and Louisiana, 6-1397
 during Civil War, 3-2044, 2046
 flower of, 22-5816
 history of, 23-5957
 hogs in, 10-2677
 lead in, 10-2689
 shoes in, 12-3103
Missouri Compromise, history of, 7-1837-38, 1846; 3-2042-43; 10-2458, 2462; 13-3490
Missouri River, in America, 23-6071
"Miss Sara Sampson", by Lessing, 13-3394
Mist, of what made, 7-1656
 that whitens fields, 14-3572-73
Mistletoe, a plant, 13-3892; 22-5516
 in Druidic religion, 3-2087
"Mistletoe Bough", story of, 14-3767-69
Mistral, in "Tartarin of Tarascon," 12-4642
"Mistress of the Seas", 6-1398
 see also England
Mistrust, character in "Pilgrim's Progress," 5-1128-29
Mitchell, James, pens of, 13-3484
Mitchell, Kientama, character in "Man Without a Country," 21-5616
Mitchell, Mount, height of, 1-10; 2-520
Miterwort, plants, 11-2883
Mites, life-history of, 13-3357, 3364
Mitford, Mary A., English author, 10-2621, 2623
 poems: see Poetry Index
Mithridates, the Great, king of Pontus, 2-440, 20-5154
Mitre, Bartolomé, president of Argentina, 20-5362
Mitre-block, use of, 3-1939
Mitres, form of joints, 5-1360
Mitre-shoot, use of, 3-1939
Mitre Tavern, Johnson at, 12-4729
Mixture, what it is, 4-958; 1032; 7-1693
Mizar, a star, 10-2639, 2641, 2645
Moa, extinct bird, 1-53; 2-1502, 1504; 23-6002
Mobile, history of, 2-2051-52; 23-5960
Moccasin, of Indians, 1-17, 12-3106
Moccasin-flower, state flower, 22-5816
 see also Lady's slipper
Mocenigo, Tomaso, a Doge of Venice, 5-1170
Mocking-bird, of America, 3-2109, 2113; 9-2346, 22-5747
Mock-Turtle, character in "Alice in Wonderland," 12-3157
Models, of Egyptian possessions, 12-4844, 4848, 4850
 of living things, 20-5328
 of ships in British Admiralty, 14-3573
Modeltown, how to make, 2-379, 481; 3-615; 4-846, 933
Mooritherium, a fossil, 14-3667
Moffatt, Annie, character in "Little Women," 20-5170
Moffatt, Robert, missionary in Bechuanaland, 2-300
Mogul-Mallet, an engine, 2-314; 3-603
Moguls, Empire of, in India, 6-1634, 1636; 7-1714-16; 13-3928; 12-4078-79
Mohács, battle of, 11-2898, 2900, 2903; 21-5656
Mohammed, the prophet, and the Saracens, 12-3188
 founder of Mohammedanism, 6-1549, 1638, 7-1714; 12-3023, 3027-29; 13-3856, 3858
Mohammed II, and Constantinople, 12-3192
Mohammed IV, and Cossacks, 14-3727
Mohammed Ali, viceroy of Egypt, 16-4204
Mohammedanism, religion of, 12-3030; 13-3856, 3858, 3860, 3928
Mohammedans, and the Jews, 24-6234
 followers of Mahomet, 6-1549, 1636; 7-1714, 1717
 in Africa, 13-4302, 4306
 in British Empire, 16-4081
 in Philippines, 9-2152
 in Turkestan, 15-3804
 Russia and, 14-3723, 3728
 school of, 22-6103
 see also Balkan Peninsula, Moors, Turks
Mohawks, Indian tribe, 1-21; 2-273
Mohawk Valley, history of, 4-894
Mohicans, Indian tribe, 1-21, 195
Mohun, Lord, character in "Henry Esmond," 13-3210
Moissan, French chemist, 13-4037
Molars, kind of teeth, 2-2078-79
Molasses, origin of, 3-708
 rum made from, 6-1392
 use of, 3-708
Molasses-candy, recipe, 3-1351

GENERAL INDEX

- Moldavia**, history of, 12-3194
part of Rumania, 12-3240
- Molding**, process of, 17-4456
- Molds**, for iron and steel, 22-5695, 5697, 5699
- Mole**, an animal, 3-585-86, 21-5572, 5574
- Mole-cricket**, an insect, 12-3194, 3198
- Molecules**, and heat, 14-3775; 15-4273
- Mollusks**, and smell, 18-4636
behavior, 1-43
close-bound, 18-3908
meaning of, 17-4389
movement of, 13-3427-28; 16-4280; 17-4375, 4503
of compound, 6-1418
of starch, 17-4487
of water, 12-3126; 16-4084
what they are, 4-1031; 5-1315
see also Compounds, making of
- Molière (Jean B. F.)**, French dramatist, 20-5309, 5311
- Molluscs**, a class, 5-1350
- Molluscs**, sea-animals, 10-2611
- Moloch**, a lizard, 5-1212, 1218
- Molokai**, leper-colony of, 1-71; 2-2150
- Molt**, of butterflies and moths, 12-3014
of caterpillar, 12-3014
of crabs, 10-2611
- Moltke, General (Hellmuth K. M. von)**, during Austro-Prussian War, 10-2597, 2599
- Molucca Islands**, Dutch possessions, 4-876
- Molybdenum**, a mineral, 23-6092
- Mombasa**, town in Africa, 16-4306; 22-5806
- Mompesson, Catherine**, and plague, 3-632
- Mompesson, William**, English rector, 3-633
- Mona**, and the forsaken Merman, 4-978
- "Mona Lisa"**, picture, by Da Vinci, 17-4590, 4593; 21-5539
- Monals**, family of pheasants, 6-1559
- Monarch**, a butterfly, 12-3020
- Monarch**, a scywer, 3-584
- Monarch of the East**, an Arum, 10-2582
- Monarchy**, form of government, 6-1434
- Monarchy, Dual**, see Austria-Hungary
- Monasteries**, in America, 15-4029
in France, 8-2068
in Great Britain, 2-466, 468, 470, 4-858; 18-4788, 4790-92
in Russia, 15-3500
in Switzerland, 12-2986
in Tibet, 15-3932
of Ireland, 21-5552
see also Monks, some famous
- "Monastery"**, story of the novel, 6-1446
- Monck (George)**, of England; see Monk (George)
- Monck, Lord**, governor of Canada, 5-1276, 1281
- Moncton**, town in New Brunswick, 21-5548-49
see also Canada, railways and canals
- Monday**, name of, 1-92
- Monny**, coming, 14-3615
Congress and, 6-1390, 1435
decimal systems of, 13-3489
distribution of United States, 13-3191
how the conjurer makes him, 6-1518
in circulation, 12-3045
of Confederacy, 8-2052
periods that cost, 22-5743
problems concerning, 4-850; 5-1104
shells used for, 1-20; 6-1427
skins as, 18-1834
things used for, 17-4374
- Monny, god of**; see Mammon
- Mongolia**, costumes of, 18-3931
history of, 18-3923
map of, 18-3926
- Mongolia**, ship, in "Round the World," 18-4911
- Mongols**, Asiatic people, 18-3926; 23-6066
invaded Russia, 14-3722
sweep of the, 18-3860
- Mongoose**, life-history, 1-157, 160
- Monitor**, a lizard, 5-1210, 1217
- Monitor**, ship, 8-2048-49, 2051; 23-6203
- Monitor-boats**, on fire-boats, 22-5759
- Monk (George)**, as admiral, 14-3547
English general, 2-527, 4-1041
- Monk**, Swiss mountain, 22-5846
- Monkbarns**, in "Antiquary," 7-1667
- Monkeys**, and men, 22-5813
animals, 3-625, 675; 4-908; 5-1287; 8-2078; 14-3668; 21-5664
capture of, 24-6244
fur-animals, 19-5072
in Congo forest, 12-3130
in India, 24-6244
in Pacific Islands, 12-3038
- Monkeys**, intelligence of, 21-5505
monkey and swar, 24-6290
parental instinct of, 20-5190
puzzle about, 1-110
Singh, and the, 22-5684
skin for shoes, 12-3106
- Monkey's Face**, a rock, 5-1312
- Monks**, character in "Oliver Twist," 10-2562
- Monks**, and silkworm eggs, 7-1829
in "Canterbury Tales," 15-3939
in England, 4-858
monk and the robber, 24-6291
some famous, 15-4029
the Black Monk, 6-1496
were scholars, 2-477
- Monk's Mill**, in Salzburg, 11-2901
- Monk's-hood**, garden flower, 20-5228, 5234
- Monochord**, musical instrument, 5-1087
- Monoliths**, Maja, 20-5326
- Monoplane**, type of aeroplane, 1-176, 180
- Monorail**, description, 1-99
- Monos**, Greek word, 16-4094
- Monotons**, what it is, 16-4094
- Monotremes**, the first mammals, 14-3668
- Monotype**, type-setting machine, 4-951
- Monroe, James**, administration of, 13-3189, 349;
as president, 7-1837; 8-2382
college of, 17-4568
- Monroe Doctrine**, of the United States, 7-1838, 10-2438; 13-3490
- Monsoons**, gales of wind, 6-1634
- Monsters**, development of, 14-3666
imaginary, 1-216
monster and Andromeda, 4-1052
of Notre Dame, 21-5534-35
see also Animals, prehistoric, Bulls, winged
- Montagnais**, tribe of Indians, 11-2783-31
- Montague family**, Shakespearean characters, 2-437
- Montague House**, in London, 5-1254
- Montaigne, Michel Eyquem de**, French writer, 20-5317, 5311
- Montana**, Shakespearean character, 2-441
- Montana**, admitted, 12-3491
copper in, 10-2678, 2685
flower of, 22-5816
gems from, 24-6381-82
sheep in, 10-2678
silver in, 10-2680
woman-representative from, 12-3121
- Montargis**, Castle of, 14-3895
- Montbretia**, a plant, 20-5238
- Montcalm (Louis Joseph)**, Marquis de, in Canadian wars, 1-195; 3-559; 4-892, 898-99, 5-1111
- Mont Cenis Tunnel**, under Alps, 12-2942, 24-6259
- Montesquieu, Lord**, and gunpowder plot, 7-1508
- Montserrat**, island, in "Count of Monte Cristo," 8-2421; 16-1321
- Montesquieu, Sir Moses**, philanthropist, 24-6330, 6338
- Montenegro**, and the Great War, 13-3217
costumes of, 13-3245
history of, 13-3241, 3247
mountains of, 11-2901
- Monterey**, battle of, 7-1814-15
Dana and, 24-6236
- Montevideo**, capital of Uruguay, 18-4601, 20-5365
- Montezuma**, ruler of Mexico, 2-27;
- Montezuma II**, Aztec ruler, 17-4394
- Montfort, John**, Count of, and Duke of Brittany, 10-2508
- Montfort, Simon de**, English patriot, 3-596, 8-2071; 18-4797
- Montgolfier (J. M. and J. M.)**, brothers, and balloon, 1-173; 22-5810
- Montgomery, James**, poems, see Poetry Index
- Montgomery (Richard)**, American general, 3-756; 4-1000; 18-5014
- Montgomery**, capital of Alabama, 20-5960, 5966
- Month**, length of, 8-2295, 22-5896
lunar, 8-2206
named for Homer, 20-5307
story of the months, 17-4531
telling the, 6-1537
- Monthyon, Baron de**, fund of, 4-1061
- Monticello**, home of Thomas Jefferson, 3-781, 783
- Montmartre**, Church of, 15-4038
- Montpelier**, home of Madison, 2-402
- Montpelier**, University of, medical school, 18-4630
- Montreal**, and the fur-trade, 18-4832, 4836
Canadian city, 1-13, 226-27; 3-554; 4-896; 5-1276, 1279; 7-1769-70; 23-6124

GENERAL INDEX

- Montreal**, capture of, 3-559, 756; 4-900, 1000
winter scene in, 1-227
see also Canada, railways and canals
- Montrose, Duke of**, character in "Rob Roy,"
6-1823
- Montrose, Earl of**, in "Legend of Montrose,"
6-1497
- Montrose, James Graham**, hero of Royalist
cause, 7-1866
- Monts, Mont de**, settlement of, 3-556
- Monuments**, equestrian, 16-4173
some foreign, 19-5040
see also Lysicrates, choragic monument of
- Moods**, of a verb, 13-3466
- Moody, Dwight Lyman**, evangelist, 8-2016-17
- Moon**-and the elephant, 24-6292
atmosphere of, 14-3680-81; 16-4311
cooling of, 6-1413; 13-3384
distance from earth, 9-2295
eclipse of, 7-1880, 1883; 12-3146; 13-3507
eclipses sun, 7-1880; 8-2092
falling into earth, 17-4374
fire in the middle of, 12-3229
halo around, 22-5812
history of, 1-145, 147; 2-321, 325, 3-568;
7-1677, 1680; 8-1969; 9-2204-05
imitation of, 16-4704-06
Indian legends of, 13-3373
influence on life, 2-377, 12-3146
influence on tides, 1-39; 9-2294, 15-4023
Jules Verne's story of, 16-4115
life on, 4-912; 12-3013
man in the, 5-1303; 23-6215
map of, 9-2208
marks on the, 12-3044
mountains of the, 9-2207; 23-6215
name of, 9-2249
reflection follows person, 11-2731
seeing the whole circle of, 16-4112
shadow of, 7-1881, 1883
shining of, 14-3680
size of, 9-2389
sleeping in light of, 13-3384
spinning of, 9-2295
temperature of, 16-4311
tides in, 9-2296
travelling with person, 11-2734
volcanoes on, 13-3251
worship of, 17-4506
- Moon-flower**, blooms at night, 15-4014
- Moon-Goddess**, temples to, 19-1958
- Moons**, of Jupiter, 12-3149
of planets, 9-2294, 2296, 2390
of Saturn, 8-2086
- Moonstone**, a gem, 24-6377, 6381
- Moore, Albert**, his picture of blossoms and
sea-shells, 16-frontis
- Moore, Clement C.**, poems: see Poetry
Index
- Moore, Sir John**, British general, 13-3316
burial, 3-713
- Moore, Thomas**, poems: see Poetry Index
song-writer, 3-546, 14-3770; 19-1946
- Moore's Creek**, battle of, 4-1002
- Moorhen**, egg of, 7-face 1760
nest of, 22-5746
- Moorings**, of a ship, 18-4619
- Moors**, and Ferdinand III, 18-1715
and Inquisition, 13-3344
in Africa, 16-4307
in Europe, 13-3339-42
made paper, 13-3484
pottery of the, 17-4540
see also Othello
- Moors**, of England: see Selwyn, Maria
- Moose**, hunting the, 22-5918
kind of deer, 2-412
- Moose-bird**: see Whiskey-Jack
- Moose-Jaw**, Canadian town, 21-5608, 5610
- Moosewood**, a tree, 17-4659-60; 20-5337
- Moguis**, Indian tribe, 1-16
- Mora**, at Verulam, 22-5912
- Moraines**, of prehistoric glaciers, 1-14
- Moran, John**, and yellow fever, 12-3237
- Moran, Thomas**, American painter, 16-4220
- Morava River**, in Europe, 11-2902, 13-3242
- Moravia**, province of, 11-2902, 2906; 13-3482
- Moravian town**, battle of, 3-739, 11-2784
- Morceri, Count of**, character in "Count of
Monte Cristo," 17-4432
- Morchella esculenta**: see Morel
- Mordant, Sir**, character in "Faerie Queene,"
3-699
- Mordant**, cream of tartar as, 13-3386
- Mordcaai**, story of, 24-6333
- More, Sir John**, father of Thomas More, 5-1330
- More, Sir Thomas**, English statesman, 4-658;
5-1330; 15-3942; 16-5092, 5095
- Mores**, part of Greece, 12-3186, 3194; 19-5049
- Moréau (Jean V.)**, French general, 4-1059;
17-4364
- Morel**, a mushroom, 16-face 4882
- Morélos (y Pávon, José María)**, rebellion of,
17-4401
- Moreno, Dr.**, and cougar, 22-808
- Morgan, Colonel**, character in "Man Without a
Country," 21-5615
- Morgan, General (Daniel)**, during Revolution,
4-1000-01, 1007-08
- Morgan, J. Pierpont**, gifts of, 17-4590
- Morgan, Mrs.**, and Earl Nithsdale, 9-2235
- Morgan, Sarah**, married Squire Boone, 24-6250
- Morgarten**, battle of, 12-2988
- Morgiana**, a slave, 1-201
- Morlah, Mount**, and Solomon's temple, 24-6331
- Mormons**, in Canada, 22-5946
religious sect, 7-1839, 1844; 21-5416
- Morning**, ship, 21-5459
- Morning-glory**, a plant, 15-4014
- Morning-glory Spring**, in Yellowstone Park,
3-584
- Morningside Park**, in New York, 19-5014, 5016
- Morning-star**, a weapon, 8-1354
- Mormington, Lord**: see Wellesley, Marquis of
- Morny, Charles**, Duclat and, 20-5316
- Moro Castle**: see Morro Castle
- Morocco**, French protectorate, 9-2426; 16-4297,
4301, 4307-08
- Moros**, in the Philippines, 8-2152
- Morrel, Maximilian**, character in "Count of
Monte Cristo," 16-4316; 17-4432
- Morris, George F.**, American poet, 2-479
- Morris, Gouverneur**, and canals, 18-4766
comment on Washington, D. C., 7-1690
- Morris, Robert**, and flag, 21-5493
- Morris, William**, painter-poet, 17-4440; 23-6039
poems: see Poetry Index
- Morris-dances**, how to perform, 11-2805
attacks for, 11-2805
- Morris-men**: see Morris dances
- Morrison, Charles**, and telegraph, 17-4442
- Morristown**, Washington at, 4-1004
- Morro Castle**, at Havana, 12-3235; 23-6049
- Morrogh**, death of, 21-5554
- Morse, Jeddiah**, father of S. F. B., 11-2713
- Morse, Samuel F. B.**, and telegraph, 10-2487,
2494; 11-2713; 13-3491, 17-4443
- Morse-code**, for telegraph, 14-3577
- Mortar**, cohesion of, 3-607
Venetian, 5-1168
- "Morte d'Arthur"**, Abbey and, 16-4248
by Malory, 15-3941
- Mortises**, in wood-joints, 6-1520
- Morton, Colonel**, character in "Old Mortality,"
7-1776
- Morton, Henry**, character in "Old Mortality,"
7-1776
- Morton, Dr. W. T. G.**, and anesthetics,
18-4632
- Mosaics**, of Byzantium, 17-4589
of Pompeii, 23-6223
of St. Sophia, 12-3188, 3192
pictures in, 12-3079, 3081, 3083
- Moscow**, burning of, 8-2063; 9-2287-88;
14-3728-29, 15-4026, 22-5756
retreat from, 17-1366
Russian city, 14-3723-24; 15-3796, 3798,
3800-02
- Moselle River**, in Europe, 11-2763, 2768
- Moses**, as a doctor, 18-4636
at Memphis, 23-6185
in Egypt, 18-4849
Jewish leader, 11-2938; 24-6380
laws of, 13-3484
statue of, 16-4173; 19-5099, 5104
- Moskhan**, abbey of, 14-3772
- Moskva River**, in Russia, 15-3800
- Moslems**, Bedouins are, 23-6105
turn toward Mecca, 12-3029
see also Mohammedans
- Mosques**, in Balkans, 12-3238; 13-3243
in Cairo, 16-4301-02
see also Pearl-Mosque
- Mosquitoes**, and Marquette, 23-6112
and yellow fever, 8-2154; 21-5596
boy who allowed, 23-6028
carry disease, 12-3195, 3199, 3201-02; 24-6368
carry malaria, 6-1432; 7-1805; 23-5723,
5893
- Moss**, "caribou," 8-1920

GENERAL INDEX

- Moss**, insects that imitate, 13-3451, 3453
 shows the North, 6-1605
 wind carries seeds of, 15-3812
- Moss-campion**, a plant, 13-4758, 4761
- Mostafa**, and the thief, 16-4889
- Moth**, affected by camphor, 16-4117
 an invertebrate, 10-2463
 and candle, 8-2008
 and flowers, 15-3812-16, 4015
 feeder of, 8-2337
 head of, 8-2335
 mimicry of, 13-3151
 various kinds of, 12-face 3011, 3194
 see also Humming-bird-moth, Silkworm, etc.
- Mother**, boy's love for, 16-4091
 effect on nursing child, 12-3180
 importance of motherhood, 11-2830
 teaching little mothers, 12-3220
 which is, 9-2245
- "Mother and Child,"** by Cassatt, 16-4255
- Mother Carey**, character in "Water Babies," 15-3839
- Mother Carey's Chickens**, birds, 7-1640
- "Mother Goose,"** authorship of, 6-1477-78
- Mother-of-pearl**, in oyster, 1-189
- "Mother of the Presidents,"** see Virginia, state
- "Mother of the Wounded,"** see Elizabeth, Queen of Rumania
- Mother-ship**, for submarines, 21-5600; 23-6208
- Mothvey Church**, marriage in, 8-2316
- Motion**, apparent diurnal, 10-2540
 area of, 15-3821
 deceptive appearance of, 18-4817
 forms of, 16-4081
 heat is a kind of, 10-2540
 Kepler's laws of, 13-3130, 14-3575-76, 3587
 laws of, 14-3675-76
 molecular, 17-4389
 Newton's laws of, 11-2911, 13-3430, 14-3587, 17-4587, 18-4812, 20-5173-74
 none in moving pictures, 20-5137
 perpetual, 14-3590, 23-5992
 proper, 10-2540
- Motor**, aeroplane, 1-177
 for electric elevator, 23-6189, 6200
 of Edison, 24-6348
- Motor-car**, and world, 2-face 424
 in the antarctic, 21-5164
 motion of, 7-1787
 numbers on, 6-1590
 what makes them go? 7-1787-89
 see also Music, school lessons in
- Motor-centre**, in the brain, 14-3692
- Motor-engine**, working of, 17-4460-61
- Motor-truck**, for coal, 4-411
- Motor-vehicles**, the earliest 23-6050
- Mott**, James, an abolitionist, 12-3121
- Mott, Lucretia**, and woman suffrage, 12-3120
- Mouton**, a giant sheep, 2-408
- Moujik**, of Tver, 15-3789
- Mould**, for plants, 15-3812, 3892
- Moulding**, ovolo, 8-1360
- Mouldings**, in carpentry, 6-1520
- Moult**, of silkworm, 7-1826
- Mound-birds**, or bush-turkeys, 6-1564
- Mound-builders**, a kind of ant, 11-2968
 remains of the, 10-2578
- Mountain**, Fanny, character in "The Virginians," 13-3123
- Mountain, Mrs.**, character in "The Virginians," 13-3420
- Mountain**, character of, 12-3032
 height of, 3-812, 15-3905
 King of the Golden, 16-4282
 king's daughter in, 7-1908
 making a, 2-426, 429, 13-3249; 15-3905
 measured by barometer, 15-3981-82
 of salt, 18-4704-06
 plants growing on, 18-4757
 top of, 3-647, 812
- Mountain-ash**, berries of, for birds, 13-3458
 flower and fruit of, 16-4134
 of Europe, 14-3532
- Mountain Creek**, bridge over, 1-34
- Mountaineer**, of Switzerland, 22-5847
- Mountain-laurel**, a shrub, 17-4556, 4558; 22-5815
- Mountain-lion**: see Cougar
- Mountain-sheep**: see Sheep, mountain
- Mountain-sickness**, cause of, 15-3980
- "Mountains of Heaven,"** in Asia, 18-3923
- "Mountain Song,"** by Uhland, 13-3396
- Mount Molyoko**, for women, 12-3118, 3122; 17-4670
- Mount Stephen**, Lord, Canadian railroad builder, 7-1769; 16-4326
- Mount Vernon**, Camp-Fire Girls at, 14-3754
 home of Washington, 2-400; 3-779, 781, 782; 6-1890
- Mount Vesuvius**, battle of, 11-2941
- Mourning-cloak**, a butterfly, 12-3011, 3020
- "Mourning Mer Graves,"** by Brush, 16-4252
- Mouse**, and Jenny Martin, 23-6129
 and the magician, 16-4285
 character in "Alice in Wonderland," 11-2958
 town mouse and the country, 12-3166
 see also Flying-mouse, Mice
- Mousehole**, fishing-village, 15-3840-41
- Mouse-tower**, legend of, 11-2765; 16-4286
- Moustapha**, a dog, 12-4865
- Mouth**, and eating, 8-2171
 and teeth, 8-2077
 arrangements of, 7-1648
 lining of, 10-2473
 of snakes, 6-1387
- Month-breather**, cause of, 24-6234
- Movement**, and life, 1-70
 centre for voluntary, 14-3692
 changes matter, 13-3425
 ciliary, 24-6234
 control of, 14-3599
 is relative, 6-1592
 see also Motion
- Moving-pictures**, making, 20-5135
- Mowat, Sir Oliver**, Canadian lawyer, 16-4223
- Mower**, a grass-cutting machine, 16-4152
 agricultural machine, 15-3951
- Mowgli**, the boy-wolf, 21-5467
- Mozambique**, insects of, 13-3447, 3450
- Mozart, Maria Anna**, musician, 13-3290
- Mozart, Wolfgang A.**, Austrian composer, 6-1088; 11-2903; 13-3285-86, 3288-90, 3292
- "Mr. Jonathan Wild the Great,"** by Fielding, 7-1753
- "Mr. Motte,"** by King, 8-2102
- Mrs. Dick**, character in "David Copperfield," 11-2866
- "Mrs. Wiggs of the Cabbage Patch,"** by Rice, 8-2102
- Much**, an outlaw, 10-2630
- "Much Ado About Nothing,"** by Shakespeare, 3-563
- Mucius, Caius**: see Scævola
- Mucklewrath**, character in "Old Mortality," 7-1779
- Muckrose Abbey**, view of, 14-3586
- Mucus**, glands that produce, 9-2361, 2366
 use of, 8-2171
- Mucus-membrane**, affected by a cold, 12-3232
- Mud**, cleaning off, 17-4194
 rocks formed of, 11-2918
 seeds carried in, 15-3899
 stains of, 21-5644
- Mud-cat**, 10-2709
 see also Goujon
- Mud-crab**: see Crab
- Muddle, Mr.**, character in "Peter Simple," 8-2028
- Mud-fishes**, of tropics, 10-2478-80, 2701; 14-3666; 24-6376
- Mud-hens**, birds, 8-1972, 9-2341
 egg of, 7-face 1756
 see also Coot, Water hen
- Mud-skipper**, fish, 10-2610
- Mugrebis**, Arab tribe, 23-6105
- Muhlberg**, battle of, 20-5239
- Mühlenberg, Dr.**, hymn-writer, 12-3054
- Muir, Alexander**, poems: see Poetry Index
- Mulberry**, food for silkworms, 7-1822, 9-2430; 12-3016
- Mulcaster, Richard**, taught Spenser, 21-5484
- Mule**, and donkeys, 21-5668
 as a draft animal, 2-289, 290
 in coal-mine, 4-837
 intelligence of, 21-5512
 of America, 10-2678
- Mule**, a machine, 19-4890
- Mulhausen**, German town, 11-2768
- Mullahs**, priests of Mohammedans, 15-3863
- Müller, F. Maximilian**, German scholar, 9-2351, 13-3433
- Müller (Johannes)**, German scientist, 11-2800
- Mullet**, a fish, 10-face 2600
- Mulock, Dinah Maria**, poems: see Poetry Index
 see also Craik, Dinah M. M.
- Multiplication**, by ninety-nine, 3-623
- Mumford (or Mulford)**, Hannah, married Elliot, 23-6114

GENERAL INDEX

- Mummies**, Egyptian, 18-4842, 4846
 leather upon, 11-2833
Mummius, Roman leader, 18-4172
Münchhausen, "by Immermann, 18-3398
Munich, capital of Bavaria, 10-2694, 11-2769; 16-4221
Municipal Building, in New York, 19-5008, 5010
Munkacsy, picture of Milton, 22-5675
Munro, Colonel, British officer, 1-196
Munster, division of Ireland, 21-5551
Murat (Joachim), in Spain, 8-1953
Murcia, province of, 13-3339
Murder, and poacher's silence, 14-3710
Murdock, William, steam-engine of, 3-600, 603
Murdockson, Margaret, character in "Heart of Midlothian," 7-1773
Murdstone, Edward, character in "David Copperfield," 11-2881
Murina, an eel, 10-2481, 2483, 2600
Murfree, Mary W., American writer, 8-2101
Murfreesborough, battle of, 8-2050
Murillo, Bartolomé E., Spanish painter, 13-3341, 3347
Murimuth, Adam, chronicle of, 3-772
Murray (James), General, governor of Quebec, 3-755
Murray Bay, watering place, 23-6121
Murray River, in Australia, 6-1374
Murzen, Swiss town, 22-5841, 5814
Mus, Publius Decius, Roman consul, 10-2666
Muscles, and bones, 14-3573
 and brain, 14-3689
 and Galen, 18-4628
 and nerves, 6-1597; 14-3596
 and their masters, 10-2647
 as engines, 17-4391
 cells of heart, 23-6108
 cross joints, 10-2465
 food-value of, 13-3273
 of bird, 8-1503
 of ear, 15-3916
 of eye, 17-4523, 4526
 of the body, 10-2646
 power of, 5-1191
 produce heat, 16-4110
 work of, 21-6622, 5624
Muscovites: see Russia
Muses, painting of, 7-1688
Museum, Home, 14-3641
 medical, in Washington, 7-1692
 National, 7-1692
 New National, 7-1692
Museum of Fine Arts, in Boston, 16-4220; 20-5389
Museum of Natural History, in New York, 4-1016; 11-2918; 20-5326
Mush, corn-meal, 2-278
Musket, David, improved Bessemer process, 22-5688
Mushroom, bear's head, 19-face 4882
 cultivated, 19-4882
 edible, 19-4881, face 4882
 emetic, 19-face 4880
 fairy-ring, edible, 19-face 4882
 of Mammoth Cave, 8-1306
 poisonous, 19-face 4880
 red-juice, 19-face 4880
 red-milk, 19-face 4880
Music, and noise, 19-4869
 another game with the piano fairies, 2-459
 crotchet in, 9-2231
 fairy meeting on Bass Road, 5-1237
 game with, 12-3117
 goblins on left side of fairies, 10-2694
 homes of the seven little fairies, 1-264-65
 in Ireland, 21-5552
 laws of, 19-4903
 magic, 22-5920
 mending tone, 16-4294
 of drinking glasses, 17-4498
 procession in Treble Road, 4-989
 reading, 15-4002
 roads the fairies travel on, 2-743
 school lessons in, 1-364; 2-459; 3-734; 4-989; 5-1237; 6-1468; 7-1727; 8-1949; 9-2231, 2373; 11-2924; 12-3171; 13-3333, 3379, 3468
 where does it come from, 2-517
 wonderful land of sound, 1-284
Musical, instruments of, 18-4844, 4850
 type of mind of, 19-5000
Musk, a flower, 5-1098
 scent of, 6-1585
Muskallonge: see Maskinonge
Musk-melon, 8-669
Muskogian: see Maskoki, Indian stock
Muskoka Lakes, in Canada, 1-226
Musk-ox, story of, 2-407, 408; 8-1918; 12-3447
Muskrat, a fur-animal, 19-5072, 5076
Muslin, India, 19-4886
Musschenbroek (Petrus van), Professor, Dutch philosopher, 2-2163
Mussels, shell-fish, 8-2412; 10-2616-18, 2708; 24-6381
 shells for boats, 15-3901
 use of, 15-3853
Musulmans, and Sepoy rebellion, 7-1720
 of India, 6-1636
 see also Mohammedans
Mustagh Mountains, in Asia, 15-3924
Mustang, a horse, 23-6068
Mustard, a plant, 4-936; 16-4132, 4134, 4211
 burns of, 10-2474
Mustard-seed, story of the, 12-3024
Mute, of violin, 22-5890
Mutiny, Indian, 18-4799
 see also India, Sepoy rebellion
Muybridge, and motion-pictures, 20-5136
Musslet, marine animal, 2-face 2404
Mycale, sea-fight at, 20-5208
Mycaene, Greek city, 19-5040, 5043; 20-5186, 520
Myra, naval battle of, 20-5274
Myllar, Andrew, a printer, 14-3612
Mylocodon, prehistoric, 1-55
Myra, a bird, 7-1763
"My Old Kentucky Home", by Foster, 12-3051
"My Pretty Jane", song, 14-3769
Myra, princess in charade, 9-2265
Myron, statues of, 16-4172
Myrtle, Venus' tree, 19-4866
Myrtleberry: see Highberry
Myrtle-warbler, a bird, 9-2346
Myraore, state of India, 7-1720
"My Study Windows", by Lowell, 6-1612
Mythe House, in "John Halifax," 15-3972
Mytyl, character in "Blue Bird," 22-5885

N

- "N"** in the Prayer-book, 13-3483
Nabonidus, king of Babylon, 19-4970; 20-5146
Nabopolassar, Assyrian general, 19-4968, 20-5144
Nacre, on pearl, 24-6381
Nadaud, Gustave, French song-writer, 14-3772
Nagana, African disease, 12-3203
Nag's Head, a rock, 5-1312
Nahuas, natives of Mexico, 17-4400
Naihe, public orator, 20-5283
Nails (finger), cutting of, painless, 16-4117
 growth of, 8-1981
 marks on, 8-1981; 16-4274
 tip not alive, 5-1195
 use of, 1-166; 5-1360; 8-2006
Nails (iron), hammering, 21-5647
 of the crown in Iron Crown, 12-3078
Nain, Le Malin Fermier et le, 20-5385
Nairne, Lady, song-writer, 14-3765, 3770
Names, anagrams from, 19-5037
 buried, 17-4385
 of colonial children, 4-960
 of English places, 1-210, 212; 2-465, 470
 of the numbers from 10 to 19, 5-1236
 Tom and Nora write their, 9-2229
 why do we have, 3-688
Nana, dog, in "Peter Pan," 11-2887
Nana Sahib, and massacre of Cawnpore, 7-1720
Nancy, character in "Oliver Twist," 10-2566
Nancy, French city, 9-2420
Nansen, Dr. Fridtjof, Arctic explorer, 21-5457, 5460; 24-6324
Nantes, capture of, 10-2508
Nantes, Edict of, 3-2074
Naphtha-still, and oil, 16-4170
Napier, David, owned Rob Roy, 10-2492
Napkin-ring, a novel, 12-3214
Naples, King of, reign of, 1-134
Naples, King of, Shakespearean character, 2-328
Naples, city of Italy, 12-3082, 3085-87
 history of, 22-5850
 museum in, 23-6226
 presses in, 14-3610
Naples, kingdom of, 12-3082
Napoleon I, emperor of France, and Austria, 1-132; 10-2561; 11-2905
 and Elizabeth Patterson, 19-4942
 and England, 5-1115; 6-1897; 12-3490; 21-5533
 and French Republic, 16-4099, 4108
 and Germany, 10-2593
 and Group of Victory, 11-2762
 and Italy, 12-3078, 3080, 3082

GENERAL INDEX

- Napoleon I.**, and Moscow, 8-2063, 15-3800, 4026
and Netherlands, 14-3547; 16-4080
and Russia, 14-3728-29
and Scandinavia, 14-3656
and Silesia, 15-1027
and Spain, 8-1952; 12-3341, 3346, 17-1514
at Elba, 8-792
buildings of, 19-5041, 21-5535
character in "Count of Monte Cristo," 16-1315
conquered Venice, 8-1168
coronation of, 21-5535, 5537
crossed the Alps, 12-2989, 2991, 24-6250, 6262
defeat of, 8-1112, 8-1399; 13-3500
during Revolution, 9-2286
emblem of, 7-1658
freed bird, 5-1330
in Egypt, 4-865-67, 16-4302, 17-4361
life of, 9-2285, 17-4359
puzzle-picture, 4-930
sang "Malbrough," 14-3772
sold Louisiana, 6-1396
son of, 2-360
sphinx of Europe, 19-4943
tomb of, 21-5538, 5540
wonderful escape of, 8-792, 16-1234
- Napoleon III.**, emperor of France, and Abd-el-Kader, 15-4025
and Franco-Prussian War, 10-259, 2, 98
and Italy, 12-3081, 3086
and Jerome N. Bonaparte, 19-4915
and Mexico, 17-4386, 4402
as king of the Netherlands, 14-3547
builder of Louvre, 21-5535
incidents in reign of, 9-2290, 10-2194
marriage of, 21-5535
- Napoleonic Wars**, and South America, 20-5370
effects of, 17-4514
history, 10-2561, 13-3346, 14-3658
- Narborough, Sir John**, and Sir Cloudesley Shovel, 18-4090
- Narcissi**, bulbs, 7-1738, 1852
- Narcissus**, a plant, 20-5140
- Nares (Sir George S.)**, arctic explorer, 21-5157, 5460
- Narrows**, in Mammoth Cave, 5-1306
of New York Harbor, 19-6008
- Narves**, a slave, 11-2943-41
- Narwhal**, marine animal, 1-216, 4-1074
- Naseby**, battle of, 7-1858, 186a
- Nashville**, capital of Tennessee, 23-7962, 7969
- Nassau**, in the Bahamas, 23-6045
- Nass River**, in Canada, 22-5780
- Nasturtiums**, flowers, 1-249, 4-331, 15-3816
- Natal**, history of, 5-1120
- Natchez**, city of Mississippi, 23-7960
- "Nathan the Wise,"** by Lessing, 13-3391
- Natick**, town founded by Elliot, 23-6115
- Nation**, the scattered, 24-6329
- Nation**, what it is, 20-3304
- Nationality**, change of, 6-1397-98
- National League**, and baseball, 20-5217
- National Transcontinental Railway**, construction of, 9-2274
- National Woman's Suffrage Association**, foundation of, 12-3121
- Nations**, strongest and happiest, 22-5815
- Nations, Battle of the**, history of, 2-460, 9-2289, 10-2594, 2597; 12-2991, 17-1368
- Natural gas**, occurrence of, 16-1169, 23-6094
- Nature**, everything is part of, 12-3232
poetry of, 9-2237
- Nature**, Book of: see Tables of Contents
- Nauvates**, Greek city, 18-4852
- "Naughtiest Day of My Life,"** 8-2100
- Naukratis**, in "Egyptian Princesses," 23-5951
- Nautilus**, a fancy boat, 15-3899
- Nautilus**, ship, 19-5049, 21-5616
- Nauvoo, Ill.**, founded by Mormons, 7-1844
- Naval College**, at Osborne, earthquake-resisting village, 19-3254
- Navarino**, battle of, 11-2816
- Navarino**, naval battle of, 13-3240
- Navarre**, Henry of: see Henry IV of France
- Navarre, Jeanne**, Queen of, mother of Henry IV, 2-334
- Navigation**, United States laws concerning, 9-2041
- Navigator Islands**, in Pacific, 2-2156
- Navy**, American, 6-1400, 1435-36, 9-3378, 12-3003; 18-4742, 21-5598, 23-6201
guns of, 23-6147
of Germany, 11-2762, 2764
of Great Britain, watched by Admiralty, 14-face 3574
- Navy**, of Prussia, 11-2764
of Russia, 14-3724, 15-3805
of Turks, 12-3193
- Navy Department**, building of, 7-1892
creation of, 6-1436
- Nawab**, of Bengal, attacked Calcutta, 7-1718; 16-1079
of Carnatic, 7-1718-20
- Naxos**, island of, 20-5150
- Nazarene**, The, character in "Ben Hur," 20-5261
- Nazareth**, in "Ben Hur," 20-5258
pilgrimages to, 15-3856
- Neal, David**, his picture of Cromwell and Milton, 22-5679
- Neale, John Mason**, hymns of, 9-2015
- Nebo**, a god, 19-4969-70
- Nebraska**, admitted, 13-3493
and Arbor Day, 17-4469
early history of, 8-2043; 13-3492
flower of, 22-5816
territory of, 8-2043
- Nebuchadnezzar**, king of Babylonia, 13-4969; 20-5153, 5152, 24-6332
- Nebulae**, earth made from, 13-3364
in the skies, 2-321; 8-1968; 11-2711, 2812-43
nebula of Orion, 8-1968-69, 10-2642
- Neck**, arteries of, 16-4201
of animals, 10-2466
protect against sun, 10-2468
- Neck, Break the Pope's**, a game, 4-966
- Necker, M.**, wife of, 18-4730
- Necklace**, head, for doll, 9-2033
of Egypt, 18-4847, 4849
of pearls, 1-190
- Nectar**, for honey, 11-2850, 2860
of flowers, 3-703, 15-3814-16, 16-4135
- Nectarine**, where from, 3-619
- Needle**, bone, of cave men, 1-206
eye of, 9-3336
how to use, 2-189
magnetic, 9-2090, 2167; 17-4182, 20-5294, 5355; 21-5527
of gramophone, 12-3145
weight when magnetized, 14-3779
see also Cleopatra's Needles, Stylus
- Needlebook**, butterfly shape, 19-5034
- Needlework**, bag for, 21-5643
various kinds of, 1-218, 5-1250, 6-1517
see also Workbasket, what to do with girl's
- Negative**, in photography, 1-45
- Negritos**, of the Philippines, 8-2152-53
- Negro**, and pun, 18-4692
and politics, 8-2011
and the Fifteenth Amendment, 9-2377
at close of Civil War, 8-2051-57
exhibits of, 20-5340
hair of, 8-1982
in Mississippi, 23-5960
in West Indies, 8-1930, 23-6042
melodies of, 12-3051
right to vote, 13-3193
skull of, 10-2769
votes given to, 6-1438
washing the, 18-1867
see also Slavery
- Nehemiah**, Biblical character, 24-6332
- "Nellie's Silver Mine,"** by Jackson, 8-2100
- Nelson**, Horatio, anniversary of name, 19-6037
and Trafalgar, 13-3346; 21-5628
at Aboukir Bay, 14-3695
at Battle of the Nile, 8-2286, 16-4304
at Copenhagen, 14-3766
battleship of, 17-4691
column and statue of, 5-1262; 19-5040, 5046
English admiral, 5-1112, 1115; 17-1459, 4361
in Battle of the Baltic, 7-1872
in the Victory, 11-frontis
- Nelson, Dr. Wolfrad**, banished to Bermuda, 5-1271
- Nelson**, Canadian city, 22-5782
- Nelson**, province of New Zealand, 6-1490
- Nelson River**, in Canada, 1-230
- Nemi Lake**, Caligula's galley under, 20-5189
- Nemo, Captain**, character in "Twenty Thousand Leagues," 19-5051
- Neon**, gaseous element, 5-1319; 6-1447
- Neo-pallium**, of the brain, 21-5624
- Nepal**, state of India, 7-1720
- Nepenthes**, insect-catching plants, 14-3566
- Neptune**, god of the sea, and Cassiopeia, 13-3373
- Neptune**, a planet, story of, 1-140, 148; 8-1964; 9-2389, 2392, 2394
- Nerbudda River**, in India, 6-1632
- Nereides**, and Cassiopeia, 13-3374

GENERAL INDEX

- Nereus**, a sea-god, 20-5186
Nerissa, a maid, 2-332
Nero, emperor of Rome, amusements of, 19-5098
 and Corinth Canal, 13-3248
 and mushrooms, 19-4882
 and the Jews, 24-6334
 character in "Ben Hur," 20-5261
 incidents in life of, 2-538; 3-634; 22-5926, 5928
 owned Epaphroditus, 11-2939
Nerva, emperor of Rome, 2-539
Nerve-cells, and chloroform, 16-4117
 and vibrations, 19-4870
 of body, 5-1122
 of brain, 14-3689
 of eye, 17-4425, 4427
 of heart, 23-6108
Nerve-currents, from ear, 15-3918
 speed of, 16-4112; 22-5722
Nerve-endings, of the brain, 14-3686
Nerve-fibres, of the eye, 17-4425, 4427
Nerves, affected by light, 3-1921
 and feeling, 17-4375
 and Galen, 18-4628
 and pain, 16-4117
 control muscles, 6-1597
 facial, 5-1285
 forest within us, 14-3595
 of body, 10-2649; 14-3687; 21-5623
 of eye, 13-3386; 16-4261; 17-4425, 4427
 of plants, 5-1284
 of sense, in skin, 8-1984
 of teeth, 8-2079
 of worm, 10-2470
 old name for tendons, 10-2647
 restoring severed, 18-4816
 sensations of, 11-2800
 spinal, 10-2468
 substance of, 10-2464, 2465
 the optic, 17-4425, 4628
 the vagus, 23-5993, 6107
Nestlings: see Bluebirds
Nestor, (Greek hero), 1-73
Nests, eatable, 9-2215-16
 for Easter eggs, 13-3321
 forsaken by bird, 21-5639
 of American birds, 7-1762
 of ants, 11-2964-73
 of birds, 7-face 1760, 22-5745
 of brush-turkey, 6-1366
 of fishes, 10-2102, 2707, 2709
 of hammerhead, 8-1976
 of spiders, 13-3360
 of wasps, 11-2857, 2859-60
 see also Ants, Birds, Cuckoo's-nest, Fishes, Weaver-birds
Netherlands, and Charles V, 10-2556, 11-2898
 comprises two countries, 14-3539
 government of, 14-3518
 heroes of the, 20-5225
 history of, 4-362; 10-2555; 14-3548; 22-5850
 separatists in, 2-524
 Spain in the, 13-3344
 states-general, 14-3544, 3548
Nets, for fish, 10-2602; 15-3842, 3850
Nettle, dead: see Dead-nettle
 stinging, 15-3893; 17-4356
 stings of a, 3-816; 9-2333
Neuber, Frau, and Locking, 13-3394
Neuchâtel, Swiss town, 12-2992
Neuchâtel Lake, Swiss, 12-2982, 2984
Nevada, admitted, 13-3493
 flower of, 22-5816
 gems from, 24-6383
 gold in, 10-2678; 20-5318
 history of, 7-1844
 population of, 9-2384
 purchase of, 13-3492
 silver in, 10-2680
 University of, at Reno, 9-2383
 volcanoes in, 1-13
Neva River, in Russia, 14-3726; 15-3798, 3801
Never-Never-Country, in Queensland, 6-1372
Never-Never-Land, in Australia, 24-6382
 in "Peter Pan," 11-2888
Neville, Miss, character in "Antiquary," 7-1670
Nevitte, (M.) Dorothy Eliza: see Southworth, Mrs. Emma
Nevski Prospect, a Petrograd street, 15-3800-01
New Albion, location of, 2-281
New Amsterdam, Dutch name for New York, 2-282
 founding of, 14-3546
 in Knickerbocker days, 22-5831
 see also New York
Newark: see Niagara-on-the-Lake
Newark, governor of, 14-3692
New Bern, founding of, 2-531
 settlement of, 2-522-23
Newbern, town in North Carolina, 22-5958
Newbold, Charles, plough of, 11-2714
Newbolt, Henry, poems: see Poetry Index
New Brunswick, and the Dominion, 5-1270, 1272
 description of, 21-5402, 5543, 5546
 productions of, 23-6092, 6094
 province of Canada, 1-224; 3-554, 758; 14-3732
 railways in, 9-2273
 university in, 21-5402
 see also Canada, railways and canals
New Brunswick, M. J., college at, 17-4588
New Brunswick, University of, in Canada, 21-5407
Newburgh, Revolutionary army disbanded at, 6-1390
New Caledonia, barrier-reef of, 9-2408
 island, 8-1493
New Carthage, founded, 2-438
 in Spain, 20-5200
 see also Cartagena
Newcastle, and coal, 4-832
Newcomb, Professor (Simon), comments of, 7-1683; 11-2843
Newcomen, Thomas, and steam-engine, 3-609; 10-2488
New England, and cotton, 7-1837
 covered by ice-sheet, 1-14
 early history of, 2-533; 5-1114
 factories of, 10-2688
 Indians of, 1-21
 lakes of, 1-14
 name of, 2-524
 opposed Mexican War, 7-1842
 opposition to War of 1812, 6-1398
 political opinions of, 8-2042
 threatened secession, 6-1397, 1399; 7-1842
New England Council, succeeded Plymouth Company, 2-526
New Forest, in New Hampshire, 2-473, 3-590
New Fort, in Isle of Jersey, 4-1063
Newfoundland, and Portugal, 2-282
 and the Dominion, 5-1276
 birds of, 1-54; 7-1646; 22-5752
 cod-fisheries, 10-2602-03
 history of, 1-224; 2-271; 3-553, 557, 559; 4-854; 24-6293
Newfoundland, kind of dog, 2-506, 508, 14-3768; 24-6294
New France, conquered, 4-900
 councils of, 3-558
 history of, 3-556, 558, 755
 see also Canada
New France, Bishop of, 3-558
New France, Company of, 3-556
 see also Hundred Associates, company of
Newgate Prison, Elizabeth Fry and, 5-1329
New Glasgow, M. S., mining town, 21-5544, 5546
New Grenada, a viceroyalty, 17-4514
 South American state, 18-4603
New Guinea, animals in, 8-804; 4-874, 876
 birds of, 6-1507-08; 7-1754
 Germany in, 11-2771
 island of, 6-1492
New Hampshire, and Vermont 7-1832
 approved Constitution, 6-1392
 colony of, 2-533
 cotton manufactures of, 10-2684; 19-4886
 crops of, 9-2384
 cutlery in, 18-4802
 flower of, 22-5816
 fruit from, 3-631
 gems from, 24-6382
 history of, 4-894
 no state universities, 17-4570
 presidents from, 9-2382
New Haven, college at, 17-4568
 settled, 2-532
New Hebrides Islands, 6-1493
New Holland, name for Australia, 3-364
New Jersey, approved Constitution, 6-1392
 brownstone in, 20-5319
 coast sinking, 1-13
 covered by glacier, 1-11
 cutlery in, 18-4802
 flower of, 22-5816
 furs from, 18-5072
 Indians of, 1-21
 name of, 2-523
 no state university, 17-4570
 oyster beds of, 15-2851
 presidents from, 9-2382

GENERAL INDEX

- New Jersey**, settlements in, 2-528-29
 sharks off coast of, 10-2478
 silk manufacturing, 10-2686
New Jersey, College of: see Princeton University
New Jersey Colony, early history, 2-533
New Jersey tea, a shrub, 17-4565
Newlands Corner, Eng., enchanted thorn of, 7-1705
New Learning, 12-3192; 15-3942
Newlyn, in Cornwall, 15-3840
Newman, Cardinal John H., hymns of, 8-2013, 2018
 poems: see Poetry Index
 portrait, 8-2013
New Mexico, admission of, 13-3495
 cliff-dwellers of, 14-3627
 coal in, 10-2680
 flower of, 22-5816
 fruit in, 22-5716
 gems of, 24-6379, 6383
 irrigation in, 21-5416
 new state of, 23-5962
 products of, 22-5716
 purchase of, 13-3492
 settlements in, 2-276, 528
 stock-raising in, 10-2681
New Orleans, battle of, 6-1400-01, 12-3010, 13-3490
 commerce of, 23-6074
 exposition of, 13-3493
 Farragut at, 8-2048, 2051
 history of, 4-900; 7-1836
 mint at, 14-3645
 port of Louisiana, 23-5960, 5967
 trade of, 13-3493
New Place, in "Guy Mannering," 6-1627
Newport News, shipyards at, 23-5958
New Providence, island of, 23-6045
New Quebec: see Ungava, district of
New Rome: see Constantinople
New Salem, Lincoln in, 3-786
New Scotland: see Nova Scotia
New Siberian Islands, in Arctic, 15-3804
New South Wales, gold in: see Gold in Australia
 history of, 2-362, 365; 6-1368-72
New Spain, history of, 17-1400
Newspaper, and burning fire, 16-4113
 early newspapers, 6-1394
 made for a cent, 20-5396
 marvel of a, 4-943
 printing, 14-3615
 stamp tax on, 4-995
Newspaper-rack, of folded paper, 18-1825
Newspaper Row, in New York, 19-5013
New Sweden, settlements of, 2-529
Newt, an amphibian, 1-215, 5-1214-15, 1220, 14-3666
New Testament, translated by Tyndale, 15-3939
Newton, Sir Isaac, and electricity, 8-2162
 and law of gravitation, 2-317, 322; 8-1961, 1968; 9-2391
 and Leibnitz, 4-865
 and light, 11-2799; 20-5161
 discoveries, 7-1674, 1681-82
 monument in Westminster Abbey, 5-1120
 three laws of, 14-3587, 20-5358
 wrote in Latin, 12-3231
Newtown, now Cambridge, 2-542
New Westminster, salmon fisheries at, 15-3955
New World, and Philip II, 22-5850
New Year's Day, a holiday, 17-4470
New York, and Northwest Territory, 7-1834
 and Vermont, 7-1832
 approved Constitution, 6-1392
 canals of, 18-4766
 claims of, 4-895
 coat-of-arms of, 19-6072
 collars and cuffs of, 10-2686
 covered by ice-sheet, 1-14
 cutlery in, 18-4802
 early traveling in, 18-4766
 fires in, 22-5757-61
 flower of, 22-5816
 fruit in, 9-2386
 furs of, 19-6074
 Indians of, 1-21
 iron industry in, 22-5688
 name of, 2-529
 no state university, 17-4570
 oil in, 18-4166
 population of, 9-2382
 presidents from, 9-2382
 seat of government, 2-399
New York, settlement of, 2-529
 Sunday laws of, 4-984
 timber in, 9-2387
 see also Manhattan, New Amsterdam, New York City
New York Bay, and Henry Hudson, 2-281
New York City, and Erie Canal, 18-4768
 and Hudson celebration, 2-282
 bridges of, 1-25
 care of its children, 12-3219
 churches in, 19-5016
 City Hall, 6-1392; 19-5006, 5010
 colleges in, 17-4568, 4570
 Custom House, 19-5006
 history of, 2-282; 6-1389, 1392; 7-1838
 islands of, 1-14
 Jews in, 24-6338
 population, 9-2384
 returned tea-ships, 4-998
 safe and sane Fourth, 17-4471
 sky-line, 9-2377
 street in, 9-2381
 tall buildings of, 10-2674
 Verrazano's statue in, 2-276
 Washington in, 6-1392
 water-supply of, 20-5193
 what one may see in, 19-5006-07
New York, College of the City of, site of, 4-1002
New York Colony, early history of, 2-533
New York Evening Post, and Payne, 12-3050
 edited by Bryant, 6-1612
New York Fire Department, work of, 22-5759
New York Harbor, flights over, 1-181
New York Ledger, and Mrs. Southworth, 8-2096
New York Police Department, Aviation Squad, 21-5191
New York Public Library, description, 13-5011, 5016-17
New York Review, edited by Bryant, 6-1612
New Zealand, animals of, 15-4021; 23-6001
 birds in, 1-53; 4-869; 6-1504, 1509-10; 7-1763, 23-6002
 geysers of, 13-3254
 gold in, 20-5321
 history of, 5-1113, 1120, 16-4080
 insects of, 13-3302
 map, 6-1485
 no dogs in, 24-6319
 no serpents in, 6-1384
 parliament of, 6-1490
 plants of, 7-1763; 15-3889, 3894
 reptiles of, 5-1210
 tea in, 23-5981
 the beautiful dominion, 6-1485
 woman suffrage in, 12-3120
Ney (Michel), Marshal, during retreat from Moscow, 9-2287
Niami Lake, discovered, 2-300
Niagara, ship, 12-3009-10
Niagara, town of, 3-758
Niagara Falls, in America, 1-15, 228, 3-690, 23-6119-20
 power from, 11-2715
Niagara-on-the-Lake, town of, 23-6121
Niagara Peninsula, in America, 1-279
 see also Canada, railways and canals
Niagara River, bridges over, 1-25; 16-4130
 in America, 3-690, 759
 Whirlpool of, 18-4811
Niall, of the Nine Hostages, 21-5552
Niasi Bay, and Young Turks, 13-2246
"Nibelungs," by Hebbel, 13-2399
Nicaragua, fruit from, 3-650
 history of, 17-4406
Nicaragua, Isthmus of, proposed canal across, 21-5594
Nicaragua Lake, sharks in, 10-2699
Niccolo, Pietro, Florentine sculptor, 5-1172
Nice, French city, 8-2290, 2422; 12-3086
Nicephorus, Greek emperor, and Caliph of Baghdad, 16-3860
Nicholas St., story of, 4-1022, 1029; 9-2184, 2186
Nicholas I, czar of Russia, 14-3728
Nicholas II, czar of Russia, 15-3805
Nicholas III, pope of Rome, and Vatican, 19-5100
Nicholas V, pope of Rome, and Vatican, 19-5100
"Nicholas Nickleby," by Dickens, 10-2459, 2669
Nicholls, Arthur Bell, husband of C. Brontë, 10-2626
Nicholson (Sir Francis), expedition of, 3-559

GENERAL INDEX

- Nicholson, Judge,** and "Star-Spangled Banner," 12-3053
- Nicholson, William,** and printing-press, 14-3611
- Nickel,** alloys of, 7-1888
- in Canada, 2-230, 2-1281, 23-6093
- in New England, 24-6296
- in steel, 22-6890
- more scarce than gold, 20-5219
- Nickleby, Kate,** character in "Nicholas Nickleby," 10-2669
- Nickleby, Mrs.,** character in "Nicholas Nickleby," 10-2672
- Nickleby, Nicholas,** character in "Nicholas Nickleby," 10-2669
- Nickleby, Ralph,** character in "Nicholas Nickleby," 10-2669
- Nicotine,** in tobacco, 12-3416
- Nidarosi** see Tiondhem, town of
- Nieder Wickenbach,** in Switzerland, 22-5847
- Niemen River,** conference on, 14-3728
- Nigeria,** Bishop (Crowthen) in, 11-2942
- Niger River,** in Africa, 2-300, 12-7127 16-4 00, 4307 08
- Night,** character in "Blue Bird," 22-748
- color and luminosity at 15-402
- flashing messages at 21-5518
- what it is 1-87
- Night-air,** effects of, 7-1804, 22-5893
- Nightdress,** case for 20-5255
- Night-hawk,** a bird 7-1761 8- 1 13-3446
- egg of, 7-face 1766
- Night-heron,** see Heron
- Nightingale, Florence,** anagram 1 in 19-0 -
- work of 3-563 5-1118 14-4729
- Nightingale, a bird,** 8-2106 07 9- 1)
- (egg of, 7-face 1760
- nest of 22-716
- the emperor's, 13-3276
- Nightjar,** a bird 7-1757, 1761 9- 1)
- (egg of, 7-face 1760
- Nightmare,** cause of, 11-273
- "Nightmare in Stone," see Stone, with dial of
- Nightshade, black,** 16-4 12
- locally 18-4660
- poisonous plant, 8-1921 16-4-113, 18-4646
- 23-6107
- the woody, 17-4110, 453
- Nightshade-family,** of plants, 16-4116
- Nihilists,** Russian political party 14-7 1
- Nijni-Novgorod,** fair at 15-3796, 380
- Nile,** battle of the 9-2286 16-4 04 17-4 61
- 21-3628
- Nile River,** delta of the, 19-478
- fishes of the 10- 183
- in Africa 2-291 4-1014 16-4300, 180 1706
- 19-4960 1961
- rising of the 8-1976
- see also Assuan Dam Egypt
- Nile-star:** see Sirius
- Nimbus-clouds,** 14-3652
- Nimrod,** excavation of 9-2331 19-4979, 4961
- Nina,** and magic slippers, 10-2631
- Ninebark,** a plant 18-1761
- Nine Holes,** a game, 6-1603
- Nine-pins,** game of in Rip Van Winkle 18-4782, 4861
- Ninette,** in Bebe est malade 5-1300
- Ninety-nine,** easiest way to multiply by 3-6-3
- Nineveh,** in Assyria, 6-1253 13-347 19-146, 1961 65, 1967 68 20-5115
- library of 13-3490
- Nipigon Lake,** in Canada 23-6120
- Nipissing Lake,** exploration of 3-556
- Nirvana,** a state of the soul, 12-3024
- Nitella, Princess,** character in Egyptian Princess 23-7951
- Nithsdale, Earl of,** escape of, 9-2235
- Nithsdale, Lady,** aided escape, 9-2233
- Nitrates,** as fertilizers 16-4114
- in South America, 18-1606, 1608 20-5366
- necessary to growth, 18-3451, 3451
- salts of nitric acid, 7-1811
- Nitro,** for matches 9-2429
- in gunpowder, 9-2444
- Nitrogen,** called azote, 13-3352
- food of plants 13-3350, 16-4111, 1144
- gaseous element, 4-906, 916, 956 6-1346
- in air, 8-1161, 8-2084, 16-4371
- in blood, 6-1490, 1467
- in compounds, 7-1694, 1811
- in grass, 18-3908
- Nitrogen,** in gunpowder, 9-2244
- in protoplasm, 5-1197
- Nitroglycerine,** for oil-wells, 16-4167-68
- Nitrous oxide,** an anesthetic, 12-4000
- Noah,** and the Babylonian flood, 16-4792
- Noah's Ark,** a canal boat, 16-4000
- Noële, Le, le roi et la paysan,** 18-3721
- Nobelman,** and Louis XII, 14-3721
- Nobles,** in Germany, 10-2554
- Noblesse,** of France, 16-4196
- Nocturnes,** in ancient Rome, 22-5755-56
- Noddy,** a bird, 8-2336, 2340
- Noel, Bonhomme, or Father Christmas,** 2-7124
- Noggs, Newman,** character in "Nicholas Nickleby," 10-2671
- Noirlier de Villefort,** character in "Count of Monte Cristo," 16-4316
- Noise,** deafens, 10-2473
- difference between music and, 19-4669
- fear of, 11-2776
- irregular sound-waves, 18-4031
- what it is 4-913
- Nolan, Philip,** in "Man Without a Country," 21-5611
- Nome,** gold at, 8-2148 18-4058, 20-5219
- Non-conductor:** see Conductor, of electricity
- None-so-pretty:** see London-pride
- Nonpareil,** a bird, 9-2346
- Noon-time,** knowing 9-2361
- why hotter at 14-3890
- Nora:** see Witting
- Nordenskiöld (Nils A. E., Baron), Arctic ex-**
plorer, 21-517-58
- Norfolk,** county of England, 2-465
- Norfolk,** navy-yard at, 8-2048
- town of Virginia 23-5958
- Norfolk Island,** 6-1193
- Normandy, Dukes of,** 2-472, 3-580, 592, 593; + 12-3131
- see also William I, the Conqueror
- Normandy, and Prince William,** 10-2507
- fisherwoman of, 9-2419
- French province 2-472 3-590; 8-2070; 9-2423-24 14-653, 3681
- old song of 8-2072
- Norman-French,** language, 2-472
- Normans,** at Paris 21-5-35
- in England, 1-127 2-465, 471; 3-589; 4-856 5-1253
- in Italy 12-3078 3092
- in Ivanhoe, 7-1667
- Norris Geyser Basin,** in Yellowstone Park, 3-781
- Norsemen:** see Northmen
- North, Lord,** and American colonies, 4-998
- North, forest-king of the,** 6-1605
- story of the 7-1917
- sun in the 19-1975
- Northallerton:** see Standard, battle of the
- North America,** animals of, 1-14, 2-408 3-678-79 68-83 803
- ants of 11-2965
- birds of 6-1561 64, 7-1761, 9-2349, 22-5753
- cotton in 19-188
- early explorations, 3-553
- tuas in 11-2836
- peasants of 13-3254
- history of 5-1114-15 16-4078
- migration in 21-5446
- land before the white men came, 1-9
- map of surface 1-8
- No thinn ind, 14-3651
- practices of 12-3129
- serpents of, 6-1193, 1186
- statue of 18-1671
- woods of 18-3991
- see also America United States etc
- "Northanger Abbey,"** by Austen 10-2622
- North Anna River,** battle of, 8-2053
- North Cape,** discovery of, 21-5456
- scenery of, 14-3661
- North Carolina,** and Constitution, 6-1192
- and Raleigh, 2-281
- and Tennessee, 7-1834 23-5982
- cotton-manufacture of, 10-2684, 19-4886
- description of, 23-5958, 5975
- early history of 2-531, 4-1002
- flower of, 22-5816
- gems from, 24-6179-81
- holidays of, 17-4470
- independence of Mecklenburg County, 4-1000
- Indians of 1-21
- Regulators of, 4-998
- secession of 8-2044, 18-3492; 23-5957
- see also Roanoke, lost colony of
- North Carolina, University of,** history of, 17-4568, 23-5958

GENERAL INDEX

Northcliffe, Lord: see Harmsworth, Alfred
North Dakota, admitted, 13-3494
 flower of, 22-5816
 wheat in, 9-2386
Northeast Passage, completed, 21-5460
North Egypt: see Egypt
"Northern Lights," by Parker, 16-1327
North Island, part of New Zealand, 6-1485, 1488, 1492
Northmen, and America, 1-16; 2-271, 273
 and Charlemagne, 8-2068
 in Arctic, 21-5156
 in France, 2-172, 9-2421
 in Ireland, 21-5552
 invasions of, 2-468, 472; 14-3652
 or Norsemen, name of, 14-3652
 see also Normandy
North Pole, life at, 21-5465
 of Mars, 9-2388
 on maps, 7-1766
 radium and, 16-4111
 reached, 9-2352
 see also Poles
North Sea, appearance of, 1-208
 fishing in, 15-3846-48
 origin of, 14-3661
North Star: see Pole-star
North Truro, town on Cape Cod, 15-3849
Northumberland, history of, 3-592
Northumberland Strait, off Nova Scotia, 21-5546
Northumbria, kingdom of, 2-166, 470, 12-3133
North Virginia, included Maine, 2-524
Northwest Company, of fur traders, 18-1852
Northwest Mounted Police, of Canada, 18-1622, 4623
Northwest Passage, search for, 2-291-82, 21-5456
Northwest Territories, of Canada, 5-1278, 1281, 6-1151, 1457, 8-1917-18, 14-3732
 production of, 23-6092
Northwest Territory, of United States, 7-1834; 12-3008
Northwich, salt mine in, 15-1017
Norton, Hon. Mrs., poems. see Poetry Index
Norway, birds of, 22-5752
 fisheries of, 15-3841
 furs of, 19-5074
 history of, 10-2551, 14-3651
 map of, 14-3662
 rat supposed to come from, 3-807
 skies in, 20-5222
Norway, Maid of: see Maid of Norway
Norwegians, in Canada, 1-230, 22-5946
Norwich, in England, 3-589
Nose, air in, 7-1803, 1805
 bleeding from, 13-3140, 19-4929
 construction of, 18-4635
 hairs inside of, 8-1982
 opening in face, 8-2077
 sneeze clears, 3-814
 use of, 18-4635
 work of, 7-1648, 21-5623 24-6230
Nostrils, of crocodile, 5-1211
 of giraffe, 4-1015
 of hippopotamus, 14-3600
 use of, 24-6232
Notebook, of history, 21-5522
Note paper, portrait on, 23-6083
Notes, musical, 10-2652, 12-3159; 22-5872
Notre Dame, Cathedral of, in Paris, 8-2068, 2071; 9-2288, 2291, 2348, 21-5534-35
Notre Dame, church in Montreal, 1-226; 20-5297
Notre Dame, in Marseilles, 9-2421
"Notre Dame," by Hugo, 20-5312
Nottingham, Countess of, and Essex, 24-6381
Nottingham, and King John, 16-4126
 Charles I at, 4-1031, 7-1858
 dogs of, 2-508
 English town of, 4-1042
 sheriff of, 10-2630
Nottingham Castle, heroine of, 14-3693
Nouraddin, and the wonderful Persian, 11-2753
Nourounihar, Princess, in "Magic Carpet," 7-1711
Nouvelle France, La: see Canada
Nova Scotia, and the Dominion, 5-1270, 1276
 description of, 21-5543
 fisheries of, 15-3958
 fruit in, 21-5544
 history of, 16-4323
 maritime province, 1-223; 2-271; 3-558, 756; 4-893, 895, 6-1457, 14-3732
 productions of, 23-6092, 6094
 railways in, 9-2273
 see also Acadia, Canada

Nova Scotia, Order of Baronets of, 3-558
Novaya Zemlya, Arctic Archipelago, 21-5456
November, meteoric showers in, 7-1832; 10-2515-46
 name of, 17-4536
 the Fifth of, 4-1036, 7-1807
 see also Fawkes, Guy
Novgorod, Russian town, 14-3722, 3726, 15-3801
"Novum Organum," by Bacon, 21-5489
Noyes, Alfred, English writer, 23-6040
Noyon, brave French maid of, 10-2666
Nubbles, Christopher, character in "Old Curiosity Shop," 11-2773
Nubia, country in Africa, 16-4306
Nucleus, of a comet, 10-2541
 of cells; see Nerves
 of life, 5-1121
 of water-drops, 7-1656
Nuggets, of gold, 20-5319, 5322
Nullification, and South Carolina, 13-3491
 history of, 10-2440
 of laws, 7-1840
Numbers, adding, 7-1726, 8-1947
 association of, 19-4998
 guessed by cards, 22-5738
 how divided, 13-3378, 3467
 how to take one from another, 9-2230
 multiplying, 9-2371, 10-2693, 11-2923, 12-3166
 names of the, 6-1467
 on motor-cars, 6-1590
 subtracting several at once, 13-3332
Numerals, Roman, 6-1747, 13-3167
Nummulites, marine animals, 9-3106
Nun, black-headed, a bird, 7-1764
 pigeon, 9-2219
Nuns, and massacre of Huguenots, 8-2075
 Bernadine, 9-2419
 character in "Table Round," 4-886
 in England, 2-166, 4-858
Nun's Island, in St. Lawrence, 23-6124
Nuremberg, German city, 10-2560, 11-1769
Nurse, for children, 12-3220
 of Isolt, 13-3283
 Shakespearean character, 2-448
 trained, 3-570
Nursery, games to be played in, 10-2590
Nussbach, German village, 11-2767
Nuthatch, bird, 9-2212, 2214, 12-3155
Nutria, a fur, 19-5072
Nuts, burning, 22-5975
 conjuring trick with, 22-5710
 of marzipan, 14-3552
 shells for boats, 15-3901
 whence they come, 8-1997
Nyassa, meaning of, 16-1306
Nyassa, Lake, in Africa, 16-1308
Nydia, picture of, 16-4252

O

Oahu, island of, 8-2148
Oak, Carlyle's comment on, 11-2914
 European, 13-3257
 is not elastic, 4-921
 Jupiter's tree, 18-1866
 King Charles', 4-1039
 leaves for designs, 13-3291
 live, 21-5432
 part not alive, 5-1195
 sacred, 10-2549, 15-4031-32
 seeds of, 15-3896
 talking, 1-203
 the tree, 11-2878; 14-3524, 3733; 19-5034; 20-5352
 various kinds of, 20-5340
 white, 21-5438
Oak-apples, cause of, 10-2475
Oak-galls, for ink, 13-3484
Oak-woods, flowers in, 15-4015
Oars, living; see Olla
Oases, of the desert, 12-3144; 15-3862; 16-4298; 23-6105, 6186
Oatcakes, Scotch, 5-1132
Oat-grass, a plant, 5-1312
Oath, Hippocratican, 18-4628
 in the tennis court, 16-4103
 of Ruell, 12-2983, 2988
Oats, are cereals, 8-2085
 as food, 5-1132; 11-2947, 2950
 false, 12-3056
 in Sweden, 14-3660
 Latin word for, 19-4950
 production of, 9-2336
 sowing wild, 23-5994

GENERAL INDEX

- Oats**, wild, 12-3057
Obayash, a hippopotamus, 4-1014
Obelisk, at boundary of Russia, 15-3798
 in Paris, 21-5538
 of Egypt, 18-4848
 of London, 19-5041
 of New York City, 1-25; 12-4848; 19-5018, 5039
 of Shalmaneser II, 19-4964
 see also Cleopatra's Needle
Ober-Alp, pass in Switzerland, 22-5847
Oberland, the Bernese, 22-5841-42, 5846
Oberon, king of the fairies, 2-327
Obi River, in Siberia, 15-3804
Object, and subject, 9-2227
 falling turns round, 10-2474
 game of, 10-2591
Oboe, musical instrument, 8-2105
O'Brien, Celeste, character in "Peter Simple," 8-2028
O'Brien, General, character in "Peter Simple," 8-2028
O'Brien, Nelly, portrait by Sir J. Reynolds, 3-765
O'Brien, Terence, character in "Peter Simple," 8-2028
Observation hive, for bees, 11-2855
Observatories, astronomical, 10-2640
 sites of, 14-3780
 Stonehenge, an observatory, 8-1960
Obsidian, glassy rocks, 3-581, 13-3251
Obsidian Cliff, in Yellowstone Park, 3-583
Obstacle race, on the Fourth, 17-1471
Obstinate, character in "Pilgrim's Progress," 5-1125-26
Oca, a loot, 18-4608
Occasion, character in "Faerie Queen," 3-699
Occupations, blind-alley, 23-6217
Ocean, birds of, 7-1639
 currents of, 16-1232
 great masses of water, 12-3032
 source of water in, 13-3505
Oceania, islands of, 6-1181, 1191-93
Oceanus, Puritan child, 4-959
Ocelli, of plants, 11-2799
Ochitree, Edie, character in "Antiquary," 7-1663, 1668
Ochtman, Leonard, American painter, 16-1258
O'Connell, Daniel, and Ireland, 21-5588
O'Connor, Roderick, king of Ireland, 21-5554
Octave, a musical, 19-4904
Octavia, wife of Mark Antony, 22-5788
Octavian, see Augustus Caesar
Octavius, see Augustus Caesar
October, birthstone for, 24-6377-78
 name of, 17-1536-37
Octopuses, sea-monsters, 10-2483-85
Octroi, of Paris, 21-5537
Ode, example of, 2-178
"Ode on the Morning of Christ's Nativity," by Milton, 22-3671
Oder, river in Europe, 11-2764, 2766
Odessa, Russian port, 14-3728-29; 16-3812
"Ode to the West Wind," by Shelley, 23-6036
Odin, Norse god, 10-2549; 14-3652
 see also Woden
Odysseus, Greek hero, 16-1280; 20-5200
 see also Ulysses
"Odyssey," by Homer, 1-71, 20-5200, 5307
 translated by Pope, 23-6011
Oedipus, and the Sphinx, 11-2752
Oril de Beauf, Salle d', in Versailles, 9-2279, 21-5537
Oersted (Hans Christian), Danish scientist, 8-2167, 17-4111-12
Offenbach (Jacques), composer, 24-6336
Ofenro, see Christopher St.
Ordensburg, town of, 23-6123
Ogilvie, Will H., poems, see Poetry Index
Oglethorpe, General James, and Georgia, 2-532
Ogre, and Jack of the Bean-stalk, 12-3207
O'Hara, Theodore, poems: see Poetry Index
O'Higgins, Bernardo, of Chile, 20-5364, 5367
 revolutionist, 17-1514
Ohio, cutlery in, 18-1802
 eggs in, 10-2678
 flower of, 22-5816
 furs of, 19-5074
 history of, 6-1899, 7-1834; 13-3490
 iron industry of, 22-5688
 petroleum in, 10-2686; 16-4166
 products from, 9-2380, 2382
 sheep in, 10-2678
Ohio Company, formed, 4-896
Ohio River, in America, 1-14; 23-6073
Ohio Valley, claims to, 3-559, 780; 4-896
"Oh, No, We Never Mention Her," song, 14-3769
"Oh! Susanna," by Foster, 12-3051
Ohthere, exploration of, 21-5456
Oies qui gardaient Rome, 15-3881
Oil, and water, 1-43; 14-3685; 16-3911
 burning of, 13-3384; 19-5025
 cleaned by soap, 9-2251
 cod-liver, 10-2602; 24-6294
 fixed and volatile oils, 1-44; 11-2804
 for burns and scalds, 12-5032
 for fuel, 10-2498
 for mosquitoes, 21-5598
 for wounds, 18-4630
 from cotton-seed, 9-2386; 19-4885
 from crabs, 10-2614
 from nuts, 8-1997-98
 from sharks, 10-2477, 2480
 gives smooth surface, 12-3147
 in milk, 20-5177
 in Morocco, 16-4301
 in Rumania, 13-3240
 in Venezuela, 18-4604
 linseed, 9-2386
 lessens friction, 18-1695
 manufactured in France, 9-2422
 of sea-animals, 4-1070-71, 1075
 of sea-birds, 6-1509-10; 7-1646
 on feathers, 11-2736
 refining crude, 18-4170
 smells of oils, 18-4636
 smooths rough water, 10-2537; 19-5022
 use of, by birds, 1-165; 6-1503; 7-1640
 used for flower perfume, 6-1515
 used in lamps, 3-669
 whence comes it? 12-3230
 see also Fat
Oil-flask, for barometer, 12-2993
Oil-glands, of birds: see Oil, on feathers
Oil-lamp, use of, 3-662-65, 668-69
Oil-pit, for gun, 23-6152
Oil-refinery, in San Francisco, 10-2677
Oil-wells, and derricks, 3-669; 12-4170
 of Baku, 14-3726; 15-3804
 story of, 16-4166
Ointments, of spermaceti, 4-1069, 1071
Ojibways, Indian tribe, 11-2785
Okapi, an animal, 4-1016-16; 20-5330; 23-5998, 6000
Oklahoma, admitted, 13-3495
 birds of, 9-2314
 flower of, 22-5816
 history of, 7-1838, 1840; 13-3494; 23-5957, 5962
 Indians of, 1-21
 oil in, 10-2680; 16-4166
 state of, 22-5715
Oklahoma City, capital of Oklahoma, 22-5715, 23-5962
Olaf, St., Olaf II of Norway, 14-3654, 3662
Olaf, crown-prince of Sweden, 14-3658
Olaf, of Orchard Farm, 22-5907
Olaf I, king of Norway, 14-3664
Olaf II, king of Norway, see Olaf, St.
Old age pensions, in New Zealand, 6-1490
"Old Black Joe," by Foster, 12-3051
"Old Boy," see Lao-Tsze
Old Bruton Church, in Williamsburg, 6-1395
Oldbuck, Jonathan, character in "Antiquary," 7-1667
Old Bullion, see Henton, Thomas H.
"Old Chester," in Mrs. Deland's stories, 8-2102
"Old Curiosity Shop," by Dickens, 10-2459; 11-2773
"Old-Dog Tray," by Foster, 12-3051
Olden, Lake, in Norway, 14-3659
"Old Faithful," a geyser, 3-582, 587
"Old-Fashioned Girl," by Alcott, 6-2099
Old Father Tiber, statue, 21-5539
Old-field lark, see Meadow-lark
"Old Folks at Home," by Foster, 12-3051
Old Glory, see America, and United States, flag of
Old Glory Driver, see Driver, Captain Stephen
"Old Hickory," see Jackson, Andrew
"Old Ironsides," by Holmes, 12-3007-08
"Old London," drawings of, 21-5630
Old Man, a rock, 5-1311
"Old Man Eloquent," see Adams, John Q.
"Old Mortality," character in "Old Mortality," 7-1773; 19-4942
"Old Mortality," by Scott, 6-1497; 7-1776
"Old Nassau," college song, 12-3054
Old North Church, in Boston, 20-5399

GENERAL INDEX

- "Old Oaken Bucket," by Woodworth, 12-3050
 Old Point Comfort, health resort, 23-6468
 Old South Church, and Boston, 20-5399
 Old Testament, words in, 9-2351
 Old Tom Peabody, a bird, 12-2460
 "Oldtown Folks," by Stowe, 2-2006
 "Old Uncle Ned," by Foster, 12-3051
 Old Woman, picture, by Rembrandt, 17-4505
 "Old Woman Tossed Up in a Blanket," a dance, 11-2805
 Old World, map of forests and deserts, 12-3128
 Oleomargarine, as food, 11-3329
 Olga, Queen, and Christianity in Russia, 14-3722
 Olifant, Basil, character in "Old Mortality," 7-1779
 Oliphant, Mrs. (Margaret O. W.), English author, 10-2621, 2627
 Olive, a color, 10-2696
 Oliver, Shakespearean character, 3-637
 "Oliver Twist," by Dickens, 10-2159, 2563
 Olives, fruit, 22-6718
 in France, 2-2422
 oil of, 5-1182; 12-3086, 13-3240
 Pallas' tree, 18-4866
 where grown, 3-650
 Olives, Mount of, church on, 20-5394
 Olivia, Countess, Shakespearean character, 2-455
 Olley, Jason, character in "Captains Courageous," 20-5376
 Olympos, see Doughnuts
 Olympia, games of, 20-5202, 5206
 Olympos, home of the gods, 12-3374
 O'Malley, Godfrey, character in "Charles O'Malley," 12-2975
 O'Malley Castle, in "Charles O'Malley," 12-2976
 Omar, a caliph, 15-3858, 16-4302
 Omnibus, early, 23-6053, 6055
 Omak, Siberian town, 15-3804
 Onaidas, Indian tribe, 1-21, 3-556
 "One Sweetly Solemn Thought," by Cary, 2-2096
 Onions, cultivation of, 12-2999, 15-3968
 make eyes water, 2-2009
 sugar in, 3-704
 Onondagas, Indian tribe, 1-21
 "On Solitude," by Pope, 23-6030
 Ontario, canals in, 9-2278
 coat-of-arms of, 19-6072
 education in, 8-1274, 21-5101-02
 forest of, 14-3733
 population of, 14-3731
 productions of, 23-6082
 province of, 1-226, 3-756, 758, 5-1270, 1-16, 1281; 6-1454
 University of, 21-5102
 woman-suffrage in, 6-1454
 see also Canada, canals in
 Ontario Hall; see Queen's University
 Ontario, Lake, attack of, 4-896
 Champlain on, 3-566
 in America, 1-14, 23-6123
 settlers about, 3-758
 Ontonabee River, in Canada, 1-228
 Onyx, precious stone, 24-6377
 Opalite, kind of limestone, 20-5349
 Opacity, of objects, 10-2851
 Opal, gem, 24-6378, 6382-83
 Opague, meaning of, 5-1284
 "Open Thy Lattice," by Foster, 12-3051
 Operator, telephone, 2-337-39
 telegraph; see Telegram, how we send it
 Ophelia, Shakespearean heroine, 2-119, 17-4479-80, 21-5589
 Opium, and De Quincey, 18-1732
 effects of, 7-1652, 13-3510
 habit of, 20-5291
 increasing dose of, 13-3417
 Oporto, city of Portugal, 13-3313, 3317
 Opossum, an animal, 4-877-78, 19-6072, 21-5661
 Opossum-mouse, an animal, 3-804
 Opposition, of Mars, 9-2391
 Optics, mathematical, 20-5246
 Opuntia, fruit of, 14-3564
 Opuche, a weed, 20-5212-13
 Oracle, of Delphi, 2-435; 3-562
 Orange, Prince of; see William the Silent, William III, king of England
 Orange (William), Prince of, husband of Mary, daughter of Charles I. 4-1038
 Orange, Princess of, and Grizel Hume, 21-5628
 Orange, a color, 10-2696; 17-4521
 Orange, blossom, a state flower, 22-5815
 citric acid in, 18-4816
 curious ways of peeling, 22-5730
 drawing or painting on, 1-267
 Orange, from Florida, 22-5960
 habitat of, 2-650-51; 12-3364
 in France, 2-2422
 in Porto Rico, 2-2156
 production of, in United States, 2-2386
 scales of trees, 13-3102
 skins for boat, 15-3900
 sugar in, 2-704
 Orange Free State, 5-1120
 Orange Grove, in arid regions, 2-2370
 in California, 10-2687
 Oranges and Lemons, a game, 20-5318
 Orange-tip, a butterfly, 12-3011
 Orang-utan, man-like ape, 3-625, 627-28; 12-3131
 Orations, Philippic, 5-1224
 Orbit, meaning of, 6-1592
 Orb-weavers; see Spiders
 Orchard-grass, grown for hay, 5-1348; 9-2384
 Orchard House, in Concord, 2-2099
 Orchard-oriole, a bird, 13-3455, 3459
 Orchestra, sound-waves, 18-4870
 Orchid-insect, mimicry of, 13-3447, 3450
 Orchids, American, 11-2886
 bird's nest, 15-3892
 British, 17-4174
 of Canada, 12-3063
 purple-fringed, 12-3063
 showy, 12-3065
 varieties of, 12-3065
 Orchis, varieties of, 17-4174, 4477-79
 Orchis-family, of plants, 16-1136
 Order, Corinthian, of architecture, 19-5040-11, 5043
 Orders-in-Council, of England, 3-733, 5-1278
 Oregon, admitted, 13-3192
 bloodstones from, 24-6380
 flower of, 22-5816
 fruit in, 3-649, 651; 22-5714
 history of, 6-1397; 7-1812, 1843
 lighthouse on coast, 3-749
 salmon in, 15-3850
 volcano in, 1-13
 wheat in, 5-1130
 Oregon, United States steamship, 21-5598
 Oregon Question, history of, 10-2148, 2143, 13-3431
 O'Reilly, John Boyle, poems, see Poetic Index
 Ore Mountains, in Europe, 10-2594; 11-3766, 2764
 Orenburg, Siberian town, 15-3805
 Orestes, and Philades, 21-5567
 Organ, and St. Cecilia, 4-1030
 given by Handel, 13-3286
 preferred by Bach, 13-3286
 sound in the, 12-3150
 Organs, luminous, 1-165
 Orgoglio, character in "Faerie Queene" 3-699
 Orient, a ship, 14-3695
 Orient Express, of Europe, 13-3211
 "Origin of Species," book by Darwin, 4-840, 841
 Orinoco River, in South America, 4-867, 18-1661
 21-5412-13
 Oriole, a bird, 13-3453, 3455
 egg of, 7-face 1756
 nest of, 22-5751
 Orion, a constellation, 8-1968-69 10-2642, 2645
 11-2842, 2847
 legend of, 13-3373-74
 Oriskany, battle of, 4-1004; 7-1658.
 Orkneys, history of, 2-472
 Orlando, Shakespearean character, 3-637, 21-5599
 Orleans, French city, 1-130; 9-2423
 Orleans, Isle d', in St. Lawrence, 3-551, 559, 23-6124
 "Ormond," by Edgeworth, 10-2621
 Ormus, Portuguese settlement, 15-3862, 3932
 Ormuzd, a Persian god, 12-3028, 20-5116
 Ornaments, copper, 1-17
 of shell, 1-20
 Ornithorhynchus, the duck-bill platypus, 14-3668
 see also Duck-bill
 Ordes, Parthian hero, 20-5151
 O'Rourke, avenged his wife, 21-5554
 Orpheus, myth painted, 7-1688
 Orpine, a plant, 20-5229
 see also Sedum
 Orpine family, of plants, 12-4758
 Orpingtons, kind of hens, 18-4712
 Orris-root, for perfumes, 20-5230
 Orsino, Shakespearean character, 2-445
 Orsova, town, 21-5658
 Orthoptera, an order of insects, 12-3198
 Ortolan, a bird, 2-2111
 Ortrud, character in "Lohengrin," 21-5561

GENERAL INDEX

- Orvieto**, Fra Angelico works at, 15-1036
Osbaldistone, Francis, hero of "Rob Roy," 6-1632-33
Osborn, Captain, character in "Masterman Ready," 8-2025
Osborne, village at, 13-3254
Osbourne Hall, in Toronto, 1-229
O'Shaughnessy, Arthur poems, see Poetry Index
Osters, a kind of willow, 1-96
Oster, Sir William, professor at McGill, 21-5403
Oslo, Norwegian town, 14-3662
Osmani see Turks, Ottoman
Osmanli, or Ottoman Turks: see Turks, Ottoman
Osmium, rare metal, 23-5994
Osmond, Norman noble, 20-5393
Osprey, a bird, 7-1892, 1897, 12-3153; 22-5753
Ossoli, Marquis, married Margaret Fuller, 8-2096
Ostend, city of Belgium, 14-3538-39
Ostrich, a bird, 6-1504-06
Ostrowsky, Alexander, Russian writer, 20-5314
Oswego, capture of, 3-559; 18-4766
Otago, province of New Zealand, 6-1490
"Othello", by Shakespeare, 2-443; 21-5585-88
Other-End-of-Nowhere, in "Water Babies," 15-3838
Othman, a caliph, 15-3858, 3863
Otho, claimed Roman empire, 2-539
Otis, Elisha O., and elevator, 11-2716
Otis, James, grave of, 20-5399
Otsego Hall, home of Cooper, 6-1611
Ottawa, capital of Canada, 1-226, 5-1278, 1280, 6-1453; 9-2272
 Library of Parliament, 6-1453; 16-4131
 Parliament Buildings of, 1-226; 6-1453; 9-2272
 see also Canada, railways and canals
Ottawa River, explored, 3-556
 in Canada, 1-228
 logs in, 16-4131
Ottawas, Indian tribe, 1-21, 11-2785
Otter, an animal, 1-160; 3-678; 19-5071, 21-5571, 5664
Otto, the Great, 11-2896
Otto I, the Great, Holy Roman Emperor, 11-2766
Ottokar, king of Bohemia, 11-2896
Ottomans: see Turks, Ottoman
Otumba, battle of, 17-4396
Oudenarde, battle of, 10-2560
Outton, fox-farms of, 19-5078
Onnes, unit of weight, 14-3673
Our Lady of the Snows: see Canada
"Our Mutual Friend", by Dickens, 10-2462
"Our Village", by Mitford, 10-2623
Outfield, in baseball, 20-5247
Outram (Sir James), relieved Lucknow, 7-1720
Ovary, of flower, 16-4135
Oven-bird, a bird, 13-3464
 of South America, 22-5752
Ovens, old-fashioned, 5-1131
 see also Jack, house of
Over-tones, of music, 19-4908
 of voice, 16-4096
Ovipositor, of insects, 13-3300
Owen, character in "Rob Roy," 6-1625
Owen, Sir Richard, English scientist, 2-514, 4-865, 868; 10-2484
Owen Sound, Canadian port, 21-5611, 23-6120
Owl, a bird, 3-805, 809; 7-1893, 1901-02; 9-2442, 12-3153
 choosing a king, 9-2404
 comes out only at night, 7-1885
 egg made into, 13-3324
 egg of, 7-face 1756
 made from circles, 6-1607
 sacrifices to, 10-2579
 see also Barn-owl, Eagle-owl, etc
Owl-moths, insects, 12-3020
Owl-parrot: see Kakapo
Owl-pigeon, bird, 9-2217
Ox-bots: see Warble-fly
Oxen, digestive organs of, 13-3274
 in agriculture, 20-5363
 of Geryon, 13-3374
 shadow-picture of ox, 20-5353
 skins for leather, 11-2834
 see also Cattle, Musk-ox
Oxenham, Captain John, character in "Westward Ho!" 14-3718
Oxeye, flowers of, 15-4016
Oxford, Earl of, in "Anne of Geierstein," 6-1496
Oxford, England, history of, 4-1038
 printing at, 14-3612
Oxidation, effects of, 12-3238
 of apple, 22-5723
 poisons that effect, 19-4691
 what it means, 5-1245
Oxides, gases, 5-1214
 of elements, 20-5396
 result of burning, 19-4874
Oxley, Lieutenant, explored Australia, 2-366
Oxus River: see Amu Daria
Oxygen, affects rock, 10-2654
 and blood, 3-814; 7-1617, 1649; 16-4201, 19-3020
 and body, 8-1429, 11-2727
 and breath, 7-1803; 22-5892; 24-6306, 6308-10
 and fading clothes, 12-3228
 and forest, 12-3127
 and matter, 20-5195
 and plants, 1-243; 2-283; 5-1284, 1340; 6-1417; 19-3020
 breathed by sponges, 16-4266
 effect of pure, 16-4114
 exhaustion of, 22-5890
 for magic lantern, 14-3775
 gaseous element, 5-1243-45, 1314, 1316
 in acids, 7-1814
 in air, 4-956-57, 5-1160-61, 8-2034, 16-4311, 17-4186
 in alcohol, 23-5992
 in Carbo-hydrate, 7-1890
 in combustion or burning, 3-809, 4-918, 7-1879, 10-2558, 13-3383-81, 14-3681, 3776, 16-4110, 19-5024, 20-5168
 in compounds, 7-1694
 in gas-making, 2-118
 in grass, 15-4908
 in gunpowder, 9-2211
 in hemoglobin, 6-1430, 1431, 1461
 in protoplasm, 5-1197
 in quicklime, 17-4371
 in rocks, 17-1583
 in sand, 20-5396
 in stars, 8-1969
 in sugar, 3-704, 13-3387; 23-5992
 in sun, 13-3388, 3507; 19-5025
 in water, 2-378, 3-571; 4-967, 1031, 5-1189; 7-1791, 9-2250; 12-3126, 13-3338, 3505; 15-4000, 16-4232; 24-6309
 lacking for earth's fire, 13-3507
 purifier, 8-2116
 rusts iron, 7-1792; 12-3227
 specific gravity of, 15-3828
 used by fish, 4-957, 7-1739, 1886; 9-2410; 10-2471, 14-3666, 3781, 15-4000, 16-4273
 weight of, 4-916
Oyster-catcher, a bird, 8-1978-79; 9-2311
Oyster-crab: see Crab
Oyster-mushroom, 19-face 4882
Oyster-plants, cultivation of, 12-2995, 3217
Oysters, and pearls, 1-189, 24-6380
 beds of, 15-3851
 destroyed by starfish, 9-2412
 farms of, 15-3853-54
 of Canada, 15-3956-57
 of the United States, 10-2678
 oyster and the lawyer, 19-4994
 shell-fish, 3-671-72, 10-2463, 2611, 2616-17; 15-3841, 3843
Ozone, in air, 7-1877

P

- P's and Q's**, mind your, 13-3433
Pachauti, Inca, 17-4508
Pachecos, Peruvian communities, 17-4508
Pacific, ship, 8-2025
Pacific Coast, claim to land on, 6-1397
Pacific Islands, animals of, 3-802
 exhibit of, 20-5332
 fruit from, 3-650
 history of, 12-3032-35
Pacific Ocean, animals in, 4-1075-76
 cables under, 19-1697
 depth of, 20-5175
 discovery of, 2-274
 Drake and, 2-280
 floor of the, 6-1492
 named, 1-66
 salmon of the, 10-2703
Packard (Alpheus S.), comment on Ungava, 8-1916
Pack-meeting, in story of Mowgli, 21-5168
Packs, dogs hunt in, 24-6319

GENERAL INDEX

- Packthread**, and electricity, 8-2163
Pad, for bleeding, 18-4616
Padden, Indian, 20-5340
 of whale, 4-1074
Paddle-wheels, for Mississippi, 23-6073
 on early boats, 10-2486, 2488-89, 2491
Paderewski, and "Yankee Doodle," 12-3052
Padua, lines in, 5-1168
Padua, University of, medical school, 18-4630
Paes, José Antonio, president of Venezuela, 18-4603
Page, Charles G., and sound waves, 2-336; 17-4446
Page, Thomas Nelson, American author, 6-1621
Pagoda, of Bangkok, 12-3022
Pago-Pago, harbor of, 8-2156
Paidela, Greek word, 3-815
Pail, of water, 15-1020; 22-5737
Pain, cause of, 12-3146
 curing by dry-cupping, 6-1589
 feeling, 15-3910; 16-1117; 18-4692
 sense of, 8-1984
 unconsciousness of, 22-5802
Paint, from coal-tar, 2-416
 how to remove, 2-488
 tax on, 4-996
 to clean, 17-1194
Painted Desert, of Arizona, 14-3625
Painted-lady, a butterfly, 12-3011, 3020
Painters, modern American, 16-4247
 of the United States, 16-4215
 twelve great, 3-761
Painting, in distemper, 5-1176
 in oil, 5-1176
 lesson on, 1-267
 with stencils, 1-107
 see also Drawing
Paint-pots, in Yellowstone Park, 3-581
Pakenham, Sir Edward, at New Orleans, 8-1400-01
Palace, Assyrian, 19-4959, 1965
 Azure, in "Blue Bird," 22-5840
 Beautiful, in "Hiram's Progress," 5-1128, 1181
Palé d'Oro, of St Mark's, 5-1168
Palms: see Scales, of grass
Palaeomastodon, a fossil, 14-3667
Palaeontology, study of fossils, 4-866
Palafox, Don José, Spanish commander, 8-1953
Palais de Justice, in Brussels, 14-3538
 in Paris, 21-5535
Palais Royal, in Paris, 9-2291, 21-5538
Palamides, Sir, a Saracen, 13-3282
Palamon, in "Canterbury Tales," 2-497
Palate, soft, 8-2174, 18-1637, 24-6356
Palatinate, Elector of, 11-904
 history of, 10-2558-59
Palatine Hill, in Rome, 20-5272, 22-5924
Palermo, Italian city, 12-3086
Palestine, and Abraham, 15-3856
 deserts of, 12-3127
 fruit in, 3-650
 history of, 6-1519; 15-3856
 language of, 5-1288
 see also Holy Land
Palestrina, musician, 13-3285
Palestro, battle of, 12-3081
Palfrey, a horse, 23-6069
Palladas, of the Hudson, 1-11 21-5128
Pallissy, Bernard, master-potter, 18-1600
Palladio, Andrea, Venetian architect, 5-1172
Pallas, and the olive, 18-1866
Palm, bones of the, 16-1200
Palm Beach, Fla., pleasure resort, 23-5960
Palmer, character in "Faele Queene," 3-699-700
 character in, "Ivanhoe," 7-1665
Palmer, Brastus, American sculptor, 18-4666-68
Palmer, Ray, poem: see Poetry Index
Palmerston, Lord, anagram of name 19-5037
Palmetto, of Southern states, 21-5432-33
Palmetto State: see South Carolina
"Pamela", by Richardson, 7-1719-50
Palm-tree, fossil, 11-2919
 of victory, 4-1029
 see also Coconut, Date-palm
Palo Alto, battle of, 7-1841
Palo Alto, university at, 17-4570, 4577
Pamir Plateau, of Central Asia, 15-3923, 3933
Pampas, treeless plains, 12-3129
Pampeluna, siege of, 15-4038
Pamphlet, stamp tax on, 4-995
Pamphleteers, days of, 7-1746
Pan, for sugar-making, 3-708
 on fire, in Pompeii, 23-6221, 6226
Panama, Bay of, 8-2159
Panama Canal, and Asia, 2-282
 construction of, 13-3494; 16-4244; 17-4297, 4405, 21-5593
 guns at, 23-6148
 history of, 1-84; 8-2159; 9-2380; 12-3050
 locks of, 18-4770
 mosquitoes and, 12-3202
Panama City, and Canal Zone, 8-2158-60; 21-5594
 railway in, 17-4407
Panama Exposition, Miss Brigham at, 8-2036
Panama, Isthmus of, and Canal, 21-5593
 and Drake, 2-280
 discovered, 2-272
 yellow fever removed from, 12-3227
Panama, Republic of, and Canal Zone, 8-2158; 21-5594
 history of, 13-3494; 17-4406; 18-4604
Pancreas, a gland, 9-2366; 23-6016
Pandora, box of, 19-5116
Panels, form of sculpture, 16-4171
 of door, 6-1520
Pangolin, an animal, 4-1017-18
Panlo, of 1873, 13-3493
Panna, Hungarian doll, 13-face 3434, 3436
Pannonia, country of, 11-2898
Pansy, a flower, 3-616; 5-1098, 1363; 16-4135; 18-4656, 4660; 20-5229, 5237
 story of, 12-3210
Pantheon, in Paris, 6-1548; 16-4174; 20-5213
 of Rome, 20-5277, 5279
Panther, Black: see Bagheera
Pantomime, tales used for, 6-1478
Paoli (Pasquale), Corsican patriot, 16-4157
Papal States, a dominion of Italy, 12-3076
Paper, and electricity, 8-2141
 as money, 14-3645
 bagasse for, 3-704
 boy who had no, 21-5478
 curled by heat, 15-4024
 flowers of, 16-4198
 for drawing, 1-266
 for school, 18-4819
 for windows, 5-1261
 from papyrus, 13-2481; 15-3909
 from rag, 10-2555
 from wood-pulp, 9-2387; 14-3734
 invention of, 13-3184
 magnified, 9-2336
 making box of, 1-250
 making of, 4-943
 manufacture in United States, 10-2686
 marram-grass for, 12-3062
 puzzles with, 18-4615, 4713
 saucepan of, 3-734
 self-toning, 11-2719
 things to make with folded, 18-4825
 tricks with, 1-106
 what made of, 4-943
 what to do with a piece of, 8-1911
 windmill from a square of, 11-2875
Paper-chase, arranging a, 23-6077
 for the house, 10-2590
Papin, Denis, and his engine, 10-2489
Papineau, Louis, Canadian leader, 3-709
Papoose, Indian baby, 1-18
Pappus, of seeds, 16-4205
Papua, birds of, 7-1760
Papyrus, Egyptian books called papyrus, 18-4846, 4850
 for paper, 13-3181, 15-3909; 18-4846
 writing on, 13-3181
Paracelsus, Swiss physician, 18-1630
Parachute, made of paper, 8-1941
 of lizards, 5-1213
 of seeds, 15-3813, 3890-91, 16-4206
Paracirrhites, a fish, 10-face 2600
Parade of Nationalities, on the Fourth, 17-4471
Paradise, Gates of: see Gate of Baptistry
Paradise-fish, nest of, 10-2707, 2709
"Paradise Lost", by Milton, 8-2351; 14-3771; 22-5675, 5678
"Paradise of Dainty Devices", collection of poems, 21-5484
Paradise-Flumes, for millinery, 7-1754
"Paradise Regained", by Milton, 22-5680
Paradise-trogon: see Quetzal
Paraffine, and petroleum, 10-2680
 in oil-well, 16-4168
 on match-heads, 9-2431, 2433
Paraguay, history of, 18-4610; 20-5362
 missions in, 17-4512
Paraguay River, in South America, 20-5365

GENERAL INDEX

- Paraldehyde**, a medicine, 7-1891
Paralysis, infantile, a disease, 24-6369
Parallels, of latitude, 7-1766
Parana River, in South America, 20-5365
Parasites, insects that are, 12-3201
 plants that are, 18-3892
Parasol-ants, of Texas, 12-2972
Parasols, in post, 13-3411-12
Paraphment, for writing-material, 13-3479, 3484
Pardoner, in "Canterbury Tales," 2-496, 15-3939
Pardons, and president, 6-1435
Pard, Ambrose, French physician, 12-4630
Parents, instinct of, 20-5189
 man who played for, 22-6028
Parl-Banou, fairy in "Magic Carpet," 7-1711
Paris, Greek hero, 1-73; 7-1688, 1710
Paris, Shakespearian character, 2-448
Paris, Matthew, history, 2-595
Paris, attacked by Zeppelins, 1-174
 description of, 9-2408, 2417, 2420; 16-4221
 during French Revolution, 9-2279
 during Reign of Terror, 5-1187
 first holiday in, 21-5533
 history of, 9-2068; 9-2290; 10-2593-99
 monument of, 19-5041
 saved by Geneviève, 9-2347
Parisians, anagram from, 19-5037, 5133
Parisii, tribes of Lutetia, 21-5534
Paris-Lyons-Mediterranean Railway, in France, 9-2422
Paris Opera-house, 9-2417; 21-5538
Paris, Treaty of, and peace, 3-559, 755, 4-900
Paris, University of, and Lanfranchi, 18-4630
Park, Mingo, explored Africa, 2-299
Park, Richard H., American sculptor, 18-4673
Parker, Sir Gilbert, Canadian author, 16-1325, 4326
Parker, Sir Hyde, in Battle of the Baltic, 7-1872; 17-4364
Parker, Jim, in story, 22-5709
Parker, Maisie, in story, 22-5709
Parker, Mrs., and the bull, 22-5709
Parks, children's use of, 12-3222
 national, in Canada, 1-226, 232
 presidents', 7-1692
 puzzle of the trees in the, 16-4203
Parkway, Washington, D. C., 7-1692
Parliament, of Australia, Canada, England, etc.: see Australia, parliament, etc.
Parliamentarians, during Civil War, 14-3693
Parliament buildings: see under name of country or city
Parliament, House of: see London, House of Parliament
Parma, Duchess of, Marie Louise called, 2-360
Parmelee, George W., educational leader, 21-5404
Parnell, Charles S., Irish leader, 21-5558
Parr, Catherine, queen of England, 4-860
Parrakeet, a bird, 7-1763
Parrhasius, Greek painter, 17-1589
Parrot, a bird, 7-1759, 1763; 9-2350
 choosing a king, 9-2403
 in Central America, 17-4406
 intelligence of, 14-3691
 spinning picture of, 21-5447
 talk of, 5-1287; 12-3226
 see also Kaka, Meeting of parrots
Parrot-tulips: see tulips
Parrot-wrasse, a fish, 10-2609-10
Perry, Sir William, arctic explorer, 21-5457
 navigator, 21-5458
Parsees, religious sect, 15-3860, 20-5155
Parseval, Major von, dirigible balloons, 1-173
Parseley, a plant, 12-3217, 15-4016; 16-4136
Parseley-family, of plants, 16-4136
Parsep, a food plant, 16-4136
Parson and His Clerk, rocks near Dawlish, 8-1995
Parsons, Charles A., and turbines, 10-2487, 2494
Parthenon, Greek temple, 3-610; 13-3240, 20-5205-06
 of spoils, 17-4886
 sculptures of the, 16-4172, 4176-77
Parthians, rulers of Persia, 20-5154
Parties, political, of United States, 4-1001; 6-1396
 see also Party, Conservative, etc.
"Partners", a story, 1-139
Partnership: see Animals, Plants, etc., partnerships of
Partners, Wintering, and fur trade, 18-4886
Partridge, William O., American sculptor, 18-4672
Partridge, a game bird, 6-1557, 1561-62, 9-2350; 12-3150
 carries seeds, 9-2214
 egg of, 7-face 1756
Partridge-vine, a plant, 12-3066-67
Party, Conservative, 6-1455, 1457
 Constitutional-Union, 8-2044
 Democratic, 6-1396; 8-2043-44; 9-2378, 2380
 Democratic-Republican, 7-1838
 Farmers', 9-2378
 Federalist, 6-1396; 7-1838
 Free Soil, 8-2043
 Liberal, American, 8-2043
 Liberal, Canadian, 6-1457
 Progressive, 13-3495
 Republican, 6-1396; 7-1838; 8-2043-44; 9-2378, 2380; 10-2437, 2443; 13-3495
 Tory, 17-4368; 18-4724
 Whig, 4-1002; 7-1840; 8-2043; 13-4724
Party, an entertainment, 24-6282
 games to play at, 8-1303; 9-1938; 22-5919
Party-line, of telephone, 2-338
Parvial, king of the Holy Grail, 21-5564
Pasadena, fête of roses, 17-4470
Pascal, Blaise, French thinker, 15-3980, 3984; 23-6053
Pashas, rulers of Egypt, 16-4302
Pasig River, at Manila, 8-2155
Pasque-flower, state flower, 22-5816
Pas, filling with sand, 16-1119
Passement, lace, 21-5525
Passengers, problem concerning, 6-1522
Passepartout, Jean, character in "Round the World," 19-4909
Passes, of Central Asia, 15-3923-24, 3922
 see also Football
Passion-music, of Bach, 13-3286
Pastor Play, in moving pictures, 20-5146
Pasteur, Louis, French scientist, 4-909, 958; 18-4631; 24-6363
Pasteur Institute, for hydrophobia, 24-6364
Pastorella, character in "Fairy Queen," 3-702
Pasture, a game, 6-1603
Pat, character in "Alice in Wonderland," 11-2962
Patagonia, animals in, 1-55
 Indians of, 17-1509, 20-5361
Patagonians: see Tehuelches
Patching, lessons in, 14-3553
Patella: see Knee-cap
Patent-office, care of United States, 6-1437
Patterson, New Jersey, silk and, 10-2686
Pathans, in India, 6-1636, 7-1714; 16-4081
Pathfinder of the Rockies: see Brémont, John C.
Paths, of comets, etc.: see Comets, Meteors, etc.
Patience, will conquer all things, 4-1013
Patmore, Coventry, poems: see Poetry Index
Patois, or dialect, 9-2424, 20-5301
Patries, of Rome, 20-5273
Patriarch, of Constantinople, 12-3186
 of the Eastern Church, 15-3802
Patricians, of Rome, 2-136, 20-5273
Patriot, St., and the shamrock, 12-3066; 17-4349, 22-5816
 cross of, 5-1239; 9-2354; 21-5492
 missionary to Ireland, 9-2354, 18-4790
 story of, 21-5552
 see also England, flag of
Patriots, of South America, 20-5361
Patriots' Day, celebration of, 17-4170
Patroclus, Greek hero, 1-71
Patrol-boats, of navy, 23-6204
Patron-saint, of Paris, 9-2348
Patrons, establishment of, 2-528
Patterns, formed by sounds, 19-5061
 how to make and paint them, 9-2233
 how to use sewing, 3-621
 making simple, with flowers, 13-3280
 of gem-cutting, 24-6378
Patterson, Elizabeth, married Jerome Bonaparte, 19-4941
Patterson, Lieutenant-Colonel, and lions, 22-5806
Patterson, Mr., father of Elizabeth, 19-4941
Patti, Adeline, and Mrs. Cleveland, 2-403
Pattison, Dora, 2-333
Paul, Apostle, incidents in life, 9-2351; 22-5928; 24-6332
Paul (I), czar of Russia, reign of, 14-3728
Paul (II), Pope of Rome, and Cellini, 22-5853
 and Vatican, 19-5100
Paul III, Pope of Rome, 19-5106
Paul VI, Pope of Rome, and Michael Angelo, 19-5103
Paul, John: see Jones, John Paul

GENERAL INDEX

- Paulina, Shakespearean character, 3-563
Paul Smith's, in the Adirondacks, 22-5949
Pavements, Roman, in England, 12-3298
Pavia, old capital of Lombards, 12-3078
Pavia, University of, medical school, 12-4620
Pawling, Camp-Fire Girls at, 14-8755
Payne, John Howard, home of, 12-3048
poems: see Poetry Index
song of, 12-3050
Paynim, Infidels, 6-1551, 1553
Paysan, Le Roi et le, 12-4056
Peabody (George), English philanthropist, 6-1120
Peace, pictures of, 7-1686, 1688
"Peace and Plenty," picture, by Inness, 12-4249
Peaceful King: see Edgar
Peacemaker: see Edward VII
Peace, Palace of, at The Hague, 24-6298
Peasepool, in "Water Babies," 12-3838
Peace River, mountain pass, 22-5778
Peace River Valley, grain in, 21-5607
Peaches, state flower, 22-5815
sugar in, 3-704
where grown, 3-649, 659; 2-2386
Peacock, Thomas Love, poems: see Poetry Index
Peacock, a bird, 7-face 1752, 1761; 2-2350
and Juno, 12-4056, 17-4525
and rain, 1-166
choosing a king, 2-2403
Peacock, a butterfly, 12-3011, 3020
Peacock, ship, 6-1398, 12-3008
Peacock Inn, in "Tom Brown's Schooldays," 12-4138
Peacock-throne, of Moguls, 6-1634
of Persia, 12-3861
Pea-crab: see Crab
Pea-family, of plants, 12-4132, 4135
Peal, giant of the, 2-2403
Peal, of anchor, 12-4620
Peal, The: see Derbyshire, county of England
Peale, Charles W., portrait of Washington, 12-4214, 4216
Peanut and spoon race, for swimmers, 11-2726
Peanuts, growth of, 2-1998
John Chinaman made of, 2-486
Pear, European wild, 14-3528
flower and fruit, 12-4134
goat made from a, 22-5741
in United States, 2-2386
pears and the lawyer, 11-2893
use of wood, 20-5352
where grown, 3-619, 660
Pearce, Charles, paintings of, 7-1688
Pearl-Mosque, in India, 6-1636
Pearls, as gems, 24-6377, 6380
Cleopatra and the, 22-5788, 5791
fisheries of, 12-3862
formation of, 1-189; 10-2616
from fish-scales, 10-2708
in Australasia, 6-1492
Pearson, Captain, commanded Scraphs, 12-3004
Peary, Robert E., arctic explorer, 2-2352, 21-5457, 5459, 5460
Peary, Mrs. Robert E., travels of, 21-5460
Peary Arctic Club, and Peary's expeditions, 21-5462
Peas, bag of, 22-5586
blossoming, 20-5232; see also Sweet Pea
cultivation of, 12-2995, 3217, 14-3554
everlasting, 3-732, 17-4475, 4480, 20-5227
food-value of, 11-2727
for hay, 2-2384
in prince's bed, 2-391
pod for boat, 12-3900
sugar in, 3-704
Peasants, Louis XII and the, 14-3711, of France, 12-4099
of Russia, 14-3727, see also Serfs
of Switzerland, 12-2987; 22-5845
peasant at the flood, 17-4357
Peasants' War, The, of Germany, 10-2555
Pease, Edward, and early railway, 3-604
Pea-shooters, battle of the, 12-4139
Peat, for fuel, 21-5559
made by mosses, 12-5085
what it is, 4-829; 14-3569
Pebbles, in bird's gizzard, 2-2363
used by Demosthenes, 5-1324
words made with, 12-5122
Pecan, a nut, 2-1997
Pecary, variety of pig, 2-412-14
Pechin, Gulf of, and Great Wall, 1-125
Pechin, Seth, character in "Martin Chuzzlewit," 10-2673
Pecopin, in story, 20-5284
Pecuniary, meaning of, 17-4374
Pedro, king of Castile, 12-2816
Pedro I, emperor of Brazil, 20-5260, 5270
Pedro II, emperor of Brazil, expelled, 20-5270
Pedro Miguel Lock, in Panama Canal, 21-5596
Pee-Ku, a game, 12-3966
Peel, Sir Robert, anagram from name, 12-5037, 5133
English statesman, 17-4266; 20-5397
Peel, Captain William, saved battery, 12-3823
"Peelers," Irish policemen, 20-5397
Peening, process of, 12-4809
"Peer Gynt," by Grieg, 12-3294
Peeryhingle, John, character in "Cricket on the Hearth," 2-2302
Pegasus, winged horse, 4-1052; 12-3373
Peggotty, Clara, character in "David Copperfield," 11-2861
Peggotty, Dan'l, character in "David Copperfield," 11-2863
Peggotty, Ham, character in "David Copperfield," 11-2863
Pegoud, Adolphe, aviator, 1-178-79
Pegs, of croquet, 17-4489
of shoes, 12-3101
of stringed instruments, 5-1087, 1092
Pekin, temples of, 12-3025
Pelagius, Pope, before Gregory, 12-4790
Pelargonium: see Geraniums
Pe-Le, Hawaiian goddess, 20-5283
Pelée Island, in Lake Huron, 22-6120
Pelée, Mt., eruption of, 12-3252; 22-6048
Pelegrina, a pearl, 24-6381
Pelham, Peter, and Copley, 12-4216
Pelham Park, in New York, 12-5012
Pellias, Greek hero, 1-203
Pelican, a bird, 2-1970, 1972; 2-2338, 2340, 2350
"Pelleas and Melisande," by Maeterlinck, 20-5314
Pellimore, character in "Table Round," 4-884
Pelopidas, Theban soldier, 5-1324
Peloponnesus, part of Greece, 5-1322; 20-5199
Pelvis, broil on, 17-4383
of the body, 10-2574, 12-4200
Pembina, Father Lacombe at, 23-6144
Macdougall at, 5-1278
Pemmican, a foodstuff, 20-5219
Penal Code, of Ireland, 21-5557
Pencil, and cedar, 21-5430
mark of, 2-2336
measurement with, 12-3173
"Pendennis," by Thackeray, 12-3515
Pendennis, Arthur, character in "Pendennis," 12-3515
Pendennis, John, character in "Pendennis," 12-3515
Pendennis, Major, character in "Pendennis," 12-3515
Pendragon, Uther, character in "Table Round," 4-882, 884
Pendulum, invented by Galileo, 7-1679
measures time, 14-3671
of clocks, 6-1537-40
registers force of gravitation, 12-3825
swinging of, 14-3572, 3583, 3592
Penelope, wife of Ulysses, 1-74, 4-980
"Penelope's Progress," by Wiggan, 2-2102
Penguins, sea-birds, 6-1504, 1509, 7-1640, 1642, 1646; 21-5668
Peninsula, Danish, map, 14-2651, 3661
of India, 6-1632
Scandinavian, 14-2651
Peninsular War, of Europe, 12-3341; 17-4366
Penitentiaries, of Northwest Mounted Police, 12-4622
Penn, Admiral, and Jamaica, 22-6044
Penn, William, and Fox, 22-5937
colony of, 2-525, 529
Pennons, use of, 7-1657
Pennsylvania, and iron-industry, 10-2684; 22-5688
claims of, 4-896
coal in, 10-2680
covered by glacier, 1-14
flower of, 22-5816
former climate, 1-13
fruit in, 2-2284
furs from, 12-5078
history of, 2-529; 4-895; 6-1392, 1394
invasion of, 2-2050
laws concerning shoes, 12-3102
name of, 2-525
petroleum in, 10-2680
population of, 2-2284
presidents from, 2-2282

GENERAL INDEX

- Pennsylvania**, settlers in, 2-525; 7-1822
silk manufactures of, 10-2686
Pennsylvania, ship, 23-6202, 6207; 24-6376
Pennsylvania Academy of Fine Arts, history, 10-4216; 18-4665
Pennsylvania Avenue, in Washington, 7-1888
Pennsylvania Railway, rolling-stock of, 2-313
Pennsylvania University, in Philadelphia, 17-4568
Penny, beyond earth's pull, 23-5993
disappearing, 9-2358; 18-4830
moving a, 21-5524
process of minting, 14-3647
rises in water, 3-733
suspended, 19-4706
tricks with, 17-4493
Penny-Post, in England, 5-1119
Pennyroyal, as medicine, 4-966
Pennywort, marsh, 19-5089
Penouch, a candy, 1-255
Pen of the Revolution: see Jefferson, Thomas
Pennrose, J. Doyle, his picture of Bode, 17-4450
Penns, early, 13-3484
fountain: see Fountain-pen
manufacture of, 13-3484
problem concerning, 5-1365
writing on paper, 7-1653
Penshurst, home of Sidney, 2-475
Pensions, German old-age, 11-2770
United States care for, 6-1437
Penstock, of electric work, 11-2715
Pentagon, a shape, 11-2927
"Penthesilea", by Kleist, 13-3396
"Pentland Rising", by Stevenson, 9-2329
Penny, flower, 20-5228
People, as materialists, 17-4483
in other worlds, 13-3511-12
life of ancient, 13-3391
more coming into the world than going out, 7-1656
number of, in picture, 23-6012
speak the same language, 17-4483
spinning of, at the poles, 20-5175
thinking of, 21-5516
tying two together, 17-4499
who are these? 17-4384
why dark or fair? 8-2007
Pepla, and the Church of Rome, 10-2552
Pepla, Lake, in the Mississippi, 23-6075
"Pepla", by Valera y Alcalá, 20-5316
Pepper, tickles the nose, 3-814
Pepperell, William, expedition of, 3-559; 4-895; 21-5548
"Pepperidge, a tree, 21-5438
"Peppermint, a plant, 13-3893
"Peppermint-creams, making, 1-255; 14-3552
"Peppermints, five-minute, 5-1251
"Pepper-roots", see Tooth-wort
"Pepper-saxifrage", see Sulphur-wort
"Pepla", a ferment, 9-2364
and heat, 18-4088
"Pepla, Samuel, and Great Fire, 22-5756
"Pepla, Indian tribe, 1-21; 4-894; 23-6115
"Pepla, part of Constantinople, 13-3241, 3244
"Pepla, Centum, what phrase means, 5-1191
"Pepla, importance of, 18-4750
"Pepla, of mind, 18-4999, 5079
"Pepla, a fish, 10-2701, 2705, 2707
"Pepla, a horse, 23-6068
"Pepla, Bettina, character in "Abbé Constantin," 18-4752
"Pepla, Sir, character in "Table Round" 4-885
"Pepla, Shakespearean character, 3-560-62
"Pepla, Puritan child, 4-959
"Pepla, a falcon, 7-1899-1900
"Pepla Pickle", by Smollett, 7-1751
"Pepla, cultivation of, 3-616, 732; 7-1852-53
"Pepla Warrior": see Jenghiz Khan
"Pepla, from coal-tar, 2-416
how to make, 6-1515
see also Ambergris
"Pepla of Night, character in "Blue Bird," 22-5339
"Pepla, of a flower, 18-4654
"Pepla, Athenian statesman, 5-1322, 1324, 1326; 20-5206
"Pepla, precious stone, 24-6378, 6381
"Pepla, a seat, at "Table Round," 4-885
"Pepla, Victorian, 2-2325
see also Age, Victorian
"Pepla, of submarine and of trenches, 22-5858-61, 5863
"Pepla, character in "Faerie Queene", 3-699
"Peristyle, of Pompeian house, 23-6227
"Periwinkle, a flower, 3-617
"Periwinkle, a shell-fish, 10-2617-18; 17-4492
"Perkin, Sir William M., discovered dyes, 10-2520
"Pernambuco, Dutch at, 20-5368
"Pernab, Prince, tomb of, 18-4842
"Perr, fiddler, 3-678
"Perrault, Charles, French writer, 6-1477
"Perronet, Edward, hymns of, 2-2018
"Perronet, chatte et le, 19-4972
"Perron, Nicholas, fur-trader, 22-5826
"Perry, James, pens of, 13-3484
"Perry, Matthew C., and Japan, 12-3010
"Perry, Wm., poems: see Poetry Index
"Perry (Oliver Hazard), and battle of Lake Erie, 2-759; 6-1398; 12-3009
portrait bust of, 18-4668
"Perry, a drink, 3-660
"Perryville, battle of, 2-2050
"Persecution, religious, 2-525, 528-31, 533
"Persepolis, Persian city, 20-5145, 5148-49, 5151
"Persens, (Greek hero, 4-1051; 7-1688; 12-3373
statue by Cellini, 22-5852, 5854-55
"Persens, a constellation, 10-2640, 2643, 2645; 11-2911
"Persia, king of, in story, 3-796
"Persia, and astrology, 3-1960
and flamingo, 8-1978
and sugar, 3-703
bowls in, 5-1263
conquered Egypt, 18-4852
constitution of, 15-3864
empire of, 7-1714
gems from, 24-6383
glass of, 5-1263
gold in, 20-5318
history of, 5-1321, 1323, 1325-26; 15-2855-56, 3928; 19-4960-61, 4970; 20-5202, 5282
map of, 15-3857
plateau of, 19-4957-58
religions of, 12-3028
rise and fall of, 20-5145
Russian war with, 14-3728
standard of, 20-5155
taught Venetians, 5-1168
Thomas, apostle in, 9-2351
see also Alexander the Great, Greece, history
"Persian Gulf, in Asia, 15-3855, 19-4960
"Persian-lamb, a fur, 19-5078
"Persians, and anemones, 11-2880
and Egypt, 18-4302
and Greece: see Greece, glory that was
and Marathon, 7-1819
and Turks, 12-3188, 3194
eat with fingers, 18-4801
pottery of, 17-4539
"Persico, statue of Columbus, 7-1685
"Persia, house of Persians, 20-5145
"Persens, problem concerning number of, 5-1104
"Perspective, in a picture, 7-1654
of the sky, 6-1592
what it is, 6-1592
wrong, 19-4925
"Perspiration, and heat of body, 14-3690
of leaves, 17-4370
"Persuasion", by Austen, 10-2622
"Perth, Abbey of, 1-257
"Perth, capital of Western Australia, 6-1374
"Peru, animals of, 19-5077
empire of, 17-4508
exhibits from, 20-5330
furs from, 19-5072
gems from, 24-6379, 6382
gold of, 20-5318
history of, 2-274; 4-867; 9-2222, 2225, 13-3342; 18-4606, 4608; 20-5364, 5367
Indians of, 17-4509
little rain in, 22-5874
scenes in, 18-4605
Spanish in, 2-521
"Perugino, Italian painter, 17-4590
"Peruvians, pins of, 19-5001
"Perseus, Palace, in Venice, 5-1173
"Pestalozzi, Johann H., educational leader, 12-2982
"Petals, for boats, 15-3900
of daisy, 9-2332
of flowers, 15-3814; 16-4114, 4124
"leaders" on, 16-4135
"Peter, St., apostle, in Rome, 12-3080; 19-5100; 22-5930
petrel named for, 7-1640
"Peter, meaning of, 19-2570
"Peter III, czar of Russia, reign of, 14-3726; 17-4355
Cossack impersonated, 14-3727

GENERAL INDEX

- Peter Pan**, character in "Peter Pan," 11-2888
costumes for, 20-5316
"Peter Pan," play of, 6-1483; 11-2887
Peter, Prince, character in "Land of Youth," 8-2061
Petersburg, siege of, 8-2053-54
"Peter Simple," by Marryat, 8-2028
Peter Simple, character in "Peter Simple," 8-2028
Peterson, William, principal of McGill, 21-5403
Peter the Great, czar of Russia, and Bering, 18-4057
incidents in reign of, 14-3724-26, 15-3800-01
Peter, the Hermit, in First Crusade, 2-500, 8-1495, 1551
Petition of Right, signed, 7-1857, 1862, 1864
Peto, a bird, 9-2220
see also Titmouse, tufted
Petof, Sándor, Hungarian poet, 21-5656
Petrarch (Francesco), and Italian typ., 14-3614
Italian poet, 14-3614, 20-5307, 5310
Petrels, birds, 7-1640-41
Petrograd, capital of Russia, 14-3726, 15-3798, 3801
Petroleum, for lamps, 3-669
hydrogen in, 8-1189
in Alaska, 15-4058
in Canada, 21-5612, 23-6094
in Philippines, 8-2152
origin of, 12-3230
production of, 10-2680
refuse as fuel, 15-3924
specific gravity of, 15-3828
use of, 16-4165
see also Oil
Petruchio, Shakespearian character, 2-126, 3-644
Petticoat, fairy's. see Foxglove
for doll, 4-949
Pettis, John, paintings of, 5-1357 6-1494
Pettigrew (James J.), and Pickett's Charge, 8-2050
Petty-officers, of navy, 23-6214
"Feveril of the Peak," story of, 6-1497
Pew, in "Treasure Island," 14-3633
Pewee, egg of, 7-face 1756
Pewter, an alloy, 7-1888
Peyster, Abraham de, statue of, 19-5010
Phædra, in "Færie Queene," 3-700
Phœasant, a bird, 6-1557-60, 9-2350
golden, a bird, 7-face 1752
Phœasant's eye, a plant, 20-5230
Phalaris, flying, 3-803-04, 14-4668
Phalanges, of hands and feet, 16-1200-01
Phalaex, Macedonian, 20-5276
meaning of, 16-4301
Phallus impudicus: see Stinkhorn
Phanes, character in "Egyptian Princess," 23-5951
Pharaoh, and Joseph, 11-2938
of Egypt. see Egypt, wonderful story of
Pharos, ship, in "Count of Monte Cristo," 16-4315
Pharpar River, of Asia, 23-6105
Pharsalia, battle of, 2-440, 20-5280, 22-5786
Phases, meaning of, 9-2390
Phedon, character in "Færie Queene," 3-699
Phœdippides, Greek runner, 7-1819
Phelps, Elizabeth S., American writer, 8-2100
Phelps Hall, at Yale, 17-4569
Phidias, Greek sculptor, 3-610, 5-1322, 16-4172, 4178; 20-5205-08
Phigaleia, Temple of Apollo at, 16-4171
Philadelphia, centennial exposition at, 9-2377
college and academy of Philadelphia, 17-4568
fire in, 22-5757
fire-companies in, 22-5756
history of, 2-398, 400, 4-998, 1006, 6-1392
mint in, 14-3645
name of, 2-531
population of, 9-2384
World's Fair at, 13-3493
Philadelphus, ship, 12-3008
Philæ, island of, 18-4853, 21-5425
Philip, grandnephew of Louis XIV., 10-2569
Philip (VI), king of France, and Edward III., 8-771
Philip (II), king of Macedon, father of Alexander, 20-5154, 5209
reign of, 5-1323-24, 1326
stories about, 21-5567-68
Philip I., king of Spain, 10-2555
Philip II., king of Spain, and Brazil, 20-5368
and Charles V. 10-2558
and Italy, 12-3078
Philip II., and the Netherlands, 1-134, 11-2898; 14-3544, 3546, 20-5225
and Portugal, 7-1716
and queens of England, 4-859, 862; 13-3342
Irving painted as, 16-4253
life of, 22-5849
Philippines named for, 8-2152
possessions of, 22-5850
Philip (II), Augustus, king of France, 6-1553; 8-2070, 18-4797
Philip, Lord of Gaub, and Jutta, 23-6191
Philip, of Austria, and Joanna, 14-3544
Philip, of Orleans, of France, 16-4106
Philip, the Good, character in "Cloister and the Hearth," 18-4069
Philippa, daughter of John of Gaunt, 15-4027
Philippa, queen of England, and burghers of Calais, 3-770, 772, 21-5533
Philippi, battle of, 20-5308
Philippines, of Demosthenes, 5-1324
Philippines Islands, baseball in, 20-5247
exhibit of, 20-5332
history of, 1-66, 2-281; 4-900, 8-2147, 2152, 11-2771, 13-3346, 3494
manila-hemp in, 15-4003-04
midshipmen and cadets from, 18-4736, 4742
size of, 9-2382
sugar in, 3-704
Philippines, University of, exists, 17-4570
Philistines, fought Hebrews, 24-6284, 6330
Philips, Stephen, English writer, 23-6040
Philopomen, Greek patriot, 5-1328
Philosophers, Greek, 5-1326
Philosophy, in India, 12-3023
schemes of, 4-865, 871
Phloxes, flowers, 3-616, 5-1098
Phoca, the harbor-seal, 4-1075
Phœbe, a bird, 7-1762, 9-2221, 13-4157
Phœbus Apollo, sun-god, 1-92
Phœnicia, gift of, 22-5788
Phœniciane, and gem-cutting, 24-6378
and the alphabet, 13-3482
bowls of, 5-1263
dogs and 24-6319
glass of, 5-1263
history of, 1-59, 2-297, 5-1325-26, 13-3343
seafaring people, 19-4964, 20-5200, 5208, 5274
Phoenix, fabulous bird, 1-217, 218, 6-1559-60
Pholas, boring animals, 10-2615, 2617
Phonograph, and study of sound-waves, 19-5061
invention of, 24-6351
trumpet, on, 19-5023
Phosphate Rock, for fertilizer, 10-2682, 2686
Phosphorescence, in fungi, 19-4883
in glow-worm, 1-165
of the sea, 14-3684
Phosphorus, a poison, 18-4691
element, 5-1197, 1318
for matches, 3-809, 812; 9-2428
for plants, 16-4144
in fish-bone, 13-3275
in foods, 13-3275
in grass, 15-3908
in milk, 11-2828
poisoning by, 19-5033
Photographs, and stereoscopes, 10-2475
developed in red light, 9-2011
early, 20-5135
how to make, 18-4287
of stars, 10-2644
on table-top, 18-4701-05
stereoscopic, 10-2475
taken by plant cells, 16-4260
what they are, 17-4586
without a camera, 11-2719
Phrases, foreign, 22-5865
Phrenology, truth of, 17-4488
Phrygia, king of: see Midas
Phyde, David, furniture-maker, 23-6177
Phylum: see Leaf-insect
Physalis, the Portuguese man-of-war, 9-2411
Physician, the Beloved, 22-5949
Physicians, Royal College of, 5-1258
Physics, study of, 13-3354, 3425
Piano, development of, 1-264, 5-1087
how does the piano play? 2-517
how to play, 13-3353
octaves of, 20-5242
strings of, 14-3774; 15-4001
tuning a, 2-517; 15-5058
see also Music
Piatti, Prospero, his picture of the Forum, 20-5932
Picasso, of Venice, 19-5041
Picard (Jean), scholar, 7-1681

GENERAL INDEX

- Picardy**, fisher-girl of, 9-2419
Picardy, French province, 9-2423
Pickens, Andrew, during Revolution, 4-1008
Pickeral, a fish, 10-2701, 2706
Pickeral-wood, a plant, 12-3065, 3068
Pickersgrill, Mrs. Mary, made flag, 12-3052
Pickett (George B.), charge of, 8-2050
Pickwick, Samuel, character in "Pickwick Papers," 9-2320; 10-2457
Pickwick Club, characters in "Little Women," 20-5169
"Pickwick Papers", by Dickens, 9-2326; 10-2457
Pickwick Portfolio, in "Little Women," 20-5169
Picnic, lunch-basket for, 14-3643
Piquet, Admiral La Motte, and American flags, 21-5493
Picts, in Great Britain, 1-210, 212-13; 12-3133; 17-4370
Picture-frame, that a boy can make, 8-1939
Picture-language, Egyptian, 18-1844
Picture-names, of plants, 19-5036
Pictures, built up from squares, 5-1097
 distorted, 21-5519
 drawn with twelve lines and a dot, 21-5450
 faces in pictures seem to follow us, 7-1884
 formed by voice, 16-4092
 French lesson in picture, 20-5392
 made by shadows, 20-5353
 making, 1-266, 4-952
 on canvas, 21-5648
 people concealed in picture, 23-6012
 prehistoric, 13-3479
 problem concerning picture, 4-911
 spinning, 21-5447
 that represent games, 21-5453
 with wrong perspective, 19-4925
 see also Moving-pictures, Puzzle-pictures
Picture-writing, of various peoples, 3-688, 11-2782; 13-3482, 19-4960
Piddock: see P'holas
Piedmont, Italian province, 12-3074
Piedmont Plateau, of the United States, 1-10
"Pied Piper of Hamelin", by Browning, 23-6038
Piegan, Indian tribe, 23-6114
Pierce, Franklin, administration of, 13-3488, 3492
 as president, 9-2043; 9-2382
Pierce, Miss, in story, 22-5709
Piercy, Captain, commander of Countess of Scarborough, 12-3004
Pierpont, John, poems: see Poetry Index
Pierre, and printing-press, 14-3614
Pietà, of Michael Angelo, 16-4173
Pieter, Dutch doll, 13-face 3434, 3438
Pietro, and Canova, 20-5381
Pietz, character in "Pilgrim's Progress," 5-1129
Pig, age of, 9-2370
 and truffles, 19-4882
 drawing a, 19-5085
 eaten by ants, 11-2974
 eats acorns, 15-3896
 in America, 1-15
 in Serbia, 13-3242
 intelligence of, 21-5509
 kills snakes, 6-1386
 made at dinner table, 9-2267
 making stuffed cloth, 4-813
 shadow-picture, 20-5353
 skins for leather, 11-2831
 that saved the castle, 18-4236
 three little pigs, 16-4278-79
 varieties of, 2-412
Pigalle, French sculptor, 16-4174
Pigeon, a bird, 9-2217-18, 2312, 2350, 15-3499
 and Darwinism, 4-870
 and the magpie, 11-2758
 dividing the, 20-5184
 egg of, 7-face 1756
 finds its way, 6-1417
 jackdaw and the, 15-3878
 see also Cape-pigeon, Dodo, Passenger-pigeon
Pigeon-berry: see Bunch-berry
Pigeon-hawk, bird of prey, 12-3153
Pigeon Lake, in Canada, 1-228
Pigeon-posts, of birds, 9-2217
Pig-iron: see Iron
Pigment-cells, of the retina, 17-4429
 sensitive to light, 16-4261
Pigments, coloring matter, 15-3911
 in eye, 16-4320; 17-4429
 in hair, 10-2469
 of skin, 10-2473; 14-3778; 15-4020
Pigmies, of Africa, 23-6000
Pig's Eye: see St. Paul, Minn.
Pigtail, new use for, 21-5478
Pike, fresh-water fish, 10-2701, 2704-05
Piki, Indian bread, 14-3628
Pilades, and Orestes, 21-5567
Pilaf, cooked-rice, 23-6102
Pilate, anagram on question of, 19-5037
Pilatus, Mt. Alpine peak, 12-2932; 22-5847
Pilchards, fish, 10-2802, 2605-06; 13-3340
Pile, the Voltaic, 17-4442
Piles, of Venice, 6-2008
Pilgrim, ship, 24-6235
Pilgrimages, to Arabia, 15-3858
 to Holy Land, 6-1549; 15-3856, 3860
 to Jerusalem, 12-3190
 to Mecca, 12-3029
 to Ste. Anne de Beaupré, 20-5297
 see also Canterbury
Pilgrim Fathers, and early America, 2-523, 526; 4-1036
 and holidays, 17-4462, 4470
Pilgrim Hall, in Plymouth, Mass., 4-1036
Pilgrims, and the Mayflower, 11-2878
Pilgrims, rocks, 23-6124
"Pilgrim's Progress", by Bunyan, 5-1126, 1181; 6-1480; 7-1745-48; 9-2351
Pillar, and Hammurabi's laws, 19-4962
 the vanishing, 7-1737
Pillars, Hall of, 18-4861
Pillars of Hercules, or Gibraltar, 12-3337, 3339, 3346, 16-4307-08, 20-5186
Pill-millipede: see Millipede
Pillory, a punishment, 7-1746, 1749
Pillows, of Roman brethren, 22-5756
Pillow-stones, for nuns, 2-466
Pill-wood-louse: see Wood-louse
Pilon, French statue, 16-4174
"Pilot", by Cooper, 6-1612
Pilot-fish, stories of, 10-2607-08
Pimpernel, a flower, 16-4013-14, 4136
Pin, hearing scratch of, 13-3391
 heat of rubbed, 12-3148
 in Confederacy, 8-2052
 point of a, 9-2336
 story of the common, 19-5001
 see also Cuckoo-pint
Pinch, Tom, character in "Martin Chuzzlewit," 10-2673
Pinckney, Charles C., American statesman, 6-1388, 1396; 13-3489
Pindus Mountains, in Europe, 12-3185
Pine, a tree, 14-3733-34; 20-5352; 21-5430-31, 5433
 and the flax, 12-3071
 in Louisiana, 23-5960
 on Colonial flag, 7-1658
 Scotch, 14-3525
 sent from colonies, 4-994
Pineapples, from Florida, 23-5960
 in West Indies, 23-6045
 where grown, 3-650, 654, 8-2151, 2156, 9-2386
Pine-cones, and tassel, 22-5816
Pineda, and Mississippi, 2-274
Pine-grosbeak: see Grosbeaks
Pinel, Dr. Philippe, and the insane, 18-4634
Pine-marten, an animal, 1-157, 160; 19-5074
Pine-sap, a plant, 12-3062
Pine-seeds, for food, 21-5430
Pine-siskin, a bird, 12-3458
Pine-tree, on flag, 21-5492
Pine-tree State: see Maine
Pine-wood, flowers in, 15-4015
Pinak, a flower, 3-732; 8-2039; 20-5228, 5233
Pink-family, of plants, 16-4135, 16-4758
Pin-money, origin of phrase, 19-5002
Pin-oak, a tree, 20-5339-40
"Pins-and-needles", cause of sensation, 10-2472
Pintle: see Cuckoo-pint
Pin-tumblers, of locks, 24-6358, 6362
Pinxter-flower, a shrub, 17-4557, 4559
Pinzon, Vicente, accompanied Columbus, 2-272
 Portuguese navigator, 20-5368
Piombo, Sebastian del, Italian artist, 19-5097
Pip, character in "Great Expectations," 10-2461
Pipe-fish, characteristics of, 10-2608; 17-4493
Piper, Pied, of Hamelin, 2-370; 3-711
Piper, bursting of frozen, 14-3684
 for drains, 17-4540
 for gas, 2-415, 418-19
 for oil, 16-4168
 of organs, 12-3150
 of peace, 11-2782
 see also Jack, house of, Water-mains, Water-pipes
Pippin, king of France, and St. Boniface, 15-4032
Pips, seeds, 16-4134
"Pirate", story of the, 6-1497

GENERAL INDEX

Pirates, American, 2-532
 Barbary, 16-4307
 characters in "Peter Pan," 11-2888
 costume for, 20-5346
 Crusoe's escape from, 5-1225
 English, 2-280
 in Mediterranean, 2-440, 12-3006, 3089;
 16-4090, 4307
 in the West Indies, 23-6043
 invade England, 1-212
 Jones called pirate, 12-3004
 owned Robinson Crusoe, 5-1223
 pirate and Alexander the Great, 21-5565
 United States' war on, 13-3490
 see also Pike
Pisa, attacked Spinalunza, 4-982
 history of, 11-2787
 Italian city, 12-3080
 lamp that Galileo watched, 14-3589
 leaning tower of, 2-317, 319, 7-1879, 14-3591,
 17-4386
Pisano, Andrea, Italian sculptor, 5-1172, 16-4173
Pisano, Giovanni, Italian sculptor, 16-4173
Pisano, Niccolò, Italian sculptor, 16-4173
Pistils, of flowers, 5-1340, 15-3816, 16-4134, 4208
Piston, of engine, 2-304-05
 of pump, 15-3983
Piston-rod, turns wheel, 6-1583
Pitcairn, Major (John), at Lexington, 4-999
Pitch, from pine, 4-994; 21-5430, 23-5958
Pitch, of light, 20-5242
 of notes, 12-3150
 of sound, 19-4872, 20-5242
 of voice, 15-4001; 16-4094, 24-6356
Pitch: see Baseball
Pitcher, in baseball, see Baseball
Pitcher, crow and the, 13-3504
 of leaf, 14-3566
Pitcher-plant, carnivorous plant, 11-2885
Pitchpipe, introduction of, 12-3049
Pitobstone, a game, 19-5132
 kind of rock, 20-5350
Pitfalls, for wild game: see Hunters, of the
 wild
Pith-ball, and electricity, 8-2142
Pit-head, coal-mines, 4-838
Pitt, William, and Ireland, 21-5558
 English statesman, 4-898, 5-1116, 1120, 9-2288
Pittsburgh, early settlement of, 4-896, 899
 fire in, 22-5757
Pittsburgh Landing, battle of, 4-2017
Pixes, of Land's End, 7-1812
Pizarro, Francisco, and the Incas, 9-2226
 conquest of Peru, 9-2222, 17-4510
Place de la Revolution, in Paris, 6-1187
Placer-mining, for gold, 7-1817
Places, legends of, 9-3403, 11-2768
 what place are we in? 9-2362
Plague, a disease, 11-2801
 at Eyam, 3-633
 bubonic, cause of, 24-6368
 in London, 8-1256
 in Milan, 8-1207
 rats and, 2-512
Platyodus tomus, a fish, 10-2482
Plaice, a fish, 10-2605-06
Plaid, Highlander's, 13-3508
Plain Buttons: see Nolan, Philip
Planchette, movement of, 21-5640
Plane, how to use, 2-384
Plane-tree, family relations, 14-3524
 of Europe, 14-3536
Planets, and astrologers, 8-1960
 and Kepler's laws, 14-3587
 and tides, 9-2294
 are round, 8-2086
 atmosphere of, 19-5026
 communication with, 16-4115
 days of, 14-3780
 distances between, 22-5892
 early knowledge of, 8-1963
 effect of gravitation on, 14-3779
 effect on life, 10-2539
 heat of, 9-2297
 history of, 10-2637
 laws of motion of, 14-3676
 meaning of word, 8-1966
 minor, 8-1966, 9-2392
 names of, 9-2249
 of suns, 7-1881; 8-1964, 1966
 path of, 9-2393
 story of the, 1-141, 141, 148; 2-322; 4-912
 use of lifeless, 13-3513
 see also Sun's family, World, and under
 individual names

Plankton, food of fishes, 19-4876
Plantain, a European weed, 15-3890
 see also Water-plantain
Plantain-eater, a bird, 7-1764
Plantations, education on, 4-962
Plant-box, miniature, 8-2038
Plant-bug, an insect, 6-1519; 12-3194
Plant-lice, insects, 13-3301
Plants, Alpine, 15-3892
 and life, 3-573
 and nitrogen-loving microbes, 4-905
 and oxygen, 18-4816
 anywhere at any time, 10-2581
 aquatic and semi-aquatic, 14-3786
 arctic, in New England, 1-10
 breathing of, 1-243, 2-283
 climbing, 1-169
 cultivation of, 13-3509
 eye of, 16-4269
 families of, 16-1133
 first living things, 2-376
 flowering, 1-188, 8-2085
 food of, 16-4111
 for aquarium, 7-1739
 growing on walls, 13-3514
 growth and electricity, 14-3679
 hearing of, 14-3567
 in a sickroom, 6-1117
 insectivorous or carnivorous, 8-2077;
 14-3566-67; 15-3814, 19-5084
 non-flowering, 8-2085
 of two worlds, 17-4349
 parasitic, 17-4474
 partnerships of, 13-3351
 picture-names of, 19-5036
 poisonous, 13-3389, 16-3813, 16-4186, 4208,
 4212, 4213, 17-4348-50, 4353, 4472-76, 4558,
 4560, 4562-65, 18-4656, 4660, 19-1956, 21-5430
 potting, 13-3509, 15-3993
 prehistoric, 1-13
 puzzle-game, 19-5129; 20-5354
 reproduction of, 8-2085
 roadside, 16-4203
 salts of, 8-2007
 selection in, 14-3562
 sensitive, 11-2798-99, 14-3567, 16-4114
 sleep of, 11-2798
 some always green? 7-1793
 staking and tying, 3-732
 story of, 1-153-58
 that imitate others, 15-3893
 that resemble stones, 15-3893
 traveling of, 15-3889
 white when grown in the dark, 6-1165
 see also Flowers
Plassey, battle of, 5-1114, 7-1718
Plaster of Paris, what it is, 7-1816
Plasticine, for modeling, 23-6167
Platoon, battle of, 20-5152, 5208
Plate, Tom, character in "Captains Courageous," 20-5375
Plateau, Mongolian, 15-3923
 see also Pamir Plateau, etc.
Plates, drying, 10-2537
 water on oily, 10-2537
 willow-pattern, 2-359
 with arms of France, 4-896
Plates, for printing, 4-953
Plates, photographic, 1-17, 4-952; 8-2011
Platinum, a metallic element, 3-668, 15-3828;
 20-5319; 23-6094
Plato, academy of, 22-5770
 Greek philosopher, 5-1320, 1326-28; 20-5208
Plato, lunar volcano, 9-2207
Platonists, philosophers, 5-1328
Platt, John James, poems: see Poetry Index
Plattsburg, battle of, 3-759; 8-1399
Platypus, duck-billed, 1-56; 4-873, 875, 21-5576
Play, for young animals: see Animals, life of
 young
Players, for model stage, 10-4823
Playfair, Lord, English scientist, 4-868
Play-grounds, in New York, 12-3222-23
"Playing possum", what it means, 4-878
Plays, acted by country people, 15-3936
 Bear and the Little Wolf, 21-5520
 Bébé est Malade, 6-1300
 for children, 6-1478, 1483
 moving-picture, 20-5138
 of Shakespeare, 2-327, 443; 3-561, 637
 of the Incas, 17-4508
 Robin Hood and his Merry Men, 21-5646
 see also under names of authors
Playing, the giant's, 21-5478
Playa, in New York, 13-3308; 19-5018

GENERAL INDEX

- Pleasure**, excitement of, 20-5397
Pleasure, City of, in "Land of Youth," 2-2061
"Pleasures of Hope," by Campbell, 14-3766
Plebe, of West Point or Annapolis, 12-4736, 4742
Plebeians, of Rome, 2-436; 20-5273
Pleiades, constellation, 8-1238; 10-2640, 2645; 12-3374; 17-4534
Hindu story about, 8-1957
legend of the, 12-3374
Plenty, fresco of, 7-1686
Plesiosaurs, extinct animal, 1-50
Pliable, character in "Pilgrim's Progress," 5-1125, 1126
Plimsoil, mammal, and water-line, 6-1588
Pliny, comment on lapis lazuli, 24-6383
Roman naturalist, 2-2161
Plot, of moving-picture play: see Scenario
Plough, a constellation, 6-1367
Plough, horse and motor, 16-4146
improvement of, 11-2711, 2714
statesman of the, 20-5273
use of, 15-3949; 22-5947
Ploughman, in "Canterbury Tales," 15-3939
Flowers, birds, 6-1561-62; 7-1644, 1796; 8-1978-79, 9-2341
egg of, 7-face 1756
Plumbago, in Canada, 21-5548
see also Graphite
Plumbago, family of plants, 20-5216
Plumcot, a Burbank fruit, 14-3564
Plumes, of birds of paradise, 7-1754
of egret, 8-1974
of marabout, 8-1976
see also Birds of Beauty
Plume-thistle, dwarf, 17-4475, 4480
Plummer, Caleb, character in "Cricket on the Hearth," 9-2303
Plums, Burbank's varieties, 14-3564
eating skin of, 22-5890
flower of and fruit, 16-4134
for prunes, 3-651
picking, 19-5132
stones of, and birds, 17-4376
used by Indians, 20-5219
where grown, 3-649, 659
Plunger, of hydraulic elevator, 23-6198
Plus, meaning of, 16-4083
Plutarch, "Lives," of Greeks and Romans, 21-5484
Pluto, king of underworld, 20-5186
Plymouth, Eng., fisheries of, 10-2604
Plymouth, Mass., name of, 2-523
settlement of, 2-526; 4-1036
Thanksgiving at, 17-4462
Plymouth Colony, early history, 2-530, 533
Plymouth Company, colonies of, 2-522, 524, 526
Plymouth Hoe, Drake at bowls on, 4-862
Plymouth Rock, landing on, 4-1036
Plymouth Rocks, kind of hens, 18-4712
Poacher, silence of, 14-3740
Pocahontas: see Baptism of Pocahontas
"Pocahontas," opera, 12-3051
Pocket-gopher, an animal, 3-679, 684
Pocket-handkerchief, embroidering, 6-1517
Fod, of pea-like plants, 16-4135
Fodman, Mr. and Mrs., characters in "Our Mutual Friend," 10-2462
Fodmays, what they are, 10-2462
Foe, Edgar Allan, American writer, 6-1609, 1616; 14-3768
memorial to, 16-4673
poems: see Poetry Index
Foe, Virginia, wife of poet, 6-1615
"Foes by Two Brothers," by Tennyson
brothers, 23-6036
"Foot at the Breakfast Table," by Holmes, 6-1617
Foot-historians, sagas of, 14-3652
Foot Laureate, of England, 2-477; 3-545, 548; 4-1057; 6-1927, 2016; 12-4716; 23-6034, 6037
Foot Laureate of Abolition: see Whittier, J. G.
Poetry, different kinds of verse, 2-369
English, 2-477, 21-5484
how to read, 2-711
how to remember, 4-823
of youth and manhood, 4-1055
Oriental, 2-477
our feelings in, 6-1571
poets and childhood, 4-923
why should we read, 3-543
Poetry, Book of: see Poetry Index and Tables of Contents
"Poetry for Children," by Lamb, 12-4731
Poets, and childhood, 4-923
Poets, boys of the, paintings of, 7-1655
of India, 7-1714
of various countries, 2-477
the poet, the goblin and the donkey, 2-3462
Poet's Corner, in Westminster, 3-773; 6-1616; 21-5486
Poet's narcissus, a plant, 20-5230
Pogonia, an orchid, 12-3083
Point, the vital, 7-1652
Pointer, a hunting dog, 2-510-11; 24-6326
Pointer, in a clock, 6-1538
"Pointers," stars, 10-2640
Point Pleasant, and Boone, 24-6254
Poires, et l'avocat, 12-4798
Poison-glands, of snake, 6-1280; 16-4275
Poison-ivy, a shrub, 17-4563-64
Poisons, and metals, 21-5516
and spasms, 17-4484
animal, 19-5023
effects of, 4-1021; 7-1652; 17-4484
of ants, 11-2969-70
of fishes, 10-2609-10
of heart, 23-6107
of mushrooms, 19-4883
of newt, 1-215
of spiders, 12-3363
of toad, 5-1215
protoplasmic, 18-4691
see also Acid, prussic, Hemlock, Plants, poisonous, Scorpions, etc.
Poison-sumac, a shrub, 17-4562-64
Poison-teeth, of snakes, 2-2078
Poitiers, battle of, 3-772; 8-2072
French city, 9-2123
Pokanokets: see Wampanoags
Poker, conducts heat, 4-1086; 5-1317
Poker, red-hot, a plant, 20-5230
see also Kniphofia
Pokering, process of, 5-1298
Poland, and bath-stones, 24-6377
and Lithuania, 15-3799
history of, 10-2559, 2560, 2596; 11-2894; 14-3656, 3722-24, 3726, 3728
Jews of, 24-6336
partition of, 11-2904; 17-4555
Polarization, of light, 20-5241
Polders, drained marshes of Holland, 14-3540
Poldhu, wireless station, 14-face 3574; 17-4448
Pole, Reginald, Cardinal, 4-859
Pole, hearing through a, 13-3391
see also Totem-pole
Polecat, life-history, 1-157, 160
Poles, natives of Poland, 11-2895; 12-3190, 3192
Poles, and auroras, 20-5294
gravitation at, 15-3825
magnetic, 17-4482; 20-5355-57; 21-5459
of a magnet, 21-5457
of compass, 17-4483
of earth, 2-432
of electricity, 2-2163, 2168
of Mars, 9-2389, 2392; 13-3388
search for, 9-2352; 21-5455-66
spinning of people at, 20-5175
Pole Star, as a guide, 17-4482
name of, 9-2250
of the north, 10-2639-41, 2643, 2645
position, 1-119
see also North Star
Police, dogs that help, 24-6328
names of London and Irish, 20-5397
Royal Northwest Mounted, 12-4621
see also Jack, house of
Polixenes, Shakespearian character, 3-562
Polk, James K., administration of, 12-2488, 2491
and Henry Clay, 10-2438
as president, 7-1842; 9-2382
Pollen, carried by insects, 15-4015
food for bees, 11-2848, 2854, 2856
forms seeds, 15-3812, 3816; 22-5874
of flowers, 6-1283, 1340; 14-3525
of orchids, 17-4479
see also Cross-fertilization, Flowers, Plants
Pollux, a star, 10-2642, 2645
Polo, Marco, travels of, 1-60; 15-3922
Polonius, Shakespearian character, 2-450
Polyarth Church, 21-5626
Polyanthus, a flower, 4-844; 7-1738; 20-5229, 5235
Polyanthus-narcissus, flowers, 20-5230
Polydorus, Greek sculptor, 12-4172
Polydorus, Greek sculptor, 12-4172
Polygala, the fringed, 12-3064
Polygamy, and Mormons, 7-1844
Polylaicos, king of Thebes, 2-474
Polynesia, islands of, 6-1486, 1492-93; 24-6219
Polyphemus, giant, 1-75

GENERAL INDEX

- Polyps**, marine animals, 9-2408, 2413
Pomelo: see Grape-fruit
Pomerania, history of, 10-2559-60
Pompeii, baking in, 8-1182
 destruction of, 4-1086; 20-5281-82
 paintings of, 17-4589
 what I saw at, 23-5221
Pompey, Roman general, 2-434, 439; 20-5278-80;
 22-5788; 24-6332
Ponce de Leon (Juan), explored America, 2-272;
 8-2156
Poncho, rolling a, 14-3753
Ponderabilia, meaning of, 16-4084
Ponds, and the field, 21-5524
Pond-weeds, aquatic plants, 7-1739-40
Ponies, communications of, 21-5510
 in coal mines, 4-836-37
 Indian, 23-6068
 in the antarctic, 21-5464
 of Shackleton's expedition, 21-5463
 Shetland, 23-6066
Font des Arts: see Arts, bridge of the
Fontenay, a soldier, 4-1063
Font-Gravé, settlement of, 3-555
Fontao, Indian leader, 4-900; 11-2784
Fontius Pilate, and Christ, 24-6332
 character in "Ben Hur," 20-5260
Font Neuf, of Paris, 21-5540
Fontypridd, bridge of, 1-23
Fools, swimming, 12-3222, 3224
Foot, of a ship, 19-4620
Foot, treasure of the, 11-2756
 woman who clothed, 17-4450
"Foot Jack", by Dibdin, 14-3766
Foot Richard's Almanac, by Franklin, 10-2442
Foot, imitative word, 9-2243
Foot-coorn, balls of, 1-255
Fope, Alexander, English poet, 4-1055, 23-6030
Fope, General (John) during Civil War, 8-2018
Fope, and England, 2-524
 anointed Napoleon, 9-2288
 Avignon Palace of, 9-2422
 chapel of a, 12-3083
 excommunications of, 14-3654
 gave away New World, 2-282; 13-3342
 head of the bishops, 18-4789
 head of the church, 2-435; 3-592, 594; 4-856,
 858-59, 10-2552
 home of the, 3-762; 12-3082, 3086; see also
 Vatican
 power of the, 10-2552; 19-5098
 who ran away, 2-501
 see also Line of Demarcation, Papal
Fopery: see Roman Catholic Church
Fopran, made from a quill, 19-4931
 "pop" of, 9-2243
Fopriajay, in "Old Mortality," 7-1776
Foplar, a tree, 11-2877; 13-3267-68; 20-5345
 Hercules' tree, 18-4866
 in Canada, 14-3733-34
 why leaves are silver-lined, 22-5775
Fopocotepetl, a volcano, 17-4397, 4401
Foppies, California, 14-3562
 flowers, 1-249; 13-3325; 14-3562; 18-1657, 4660
 for appliqué, 19-5031
 golden, 22-5815
 horned, 16-4134; 20-5212, 5213
 seeds of, 18-3896
Foppy, family of plants, 16-4134
Foppy-head, a seed-vessel, 16-4134
Poqualin, Jean Baptiste: see Molière
Porcelain, discovery of, 17-4540
 Dresden, 11-2764
 manufacture of, 17-4546
 of Copenhagen, 14-3658
Porch, of folded paper, 18-4825
Porcupine, an animal, 3-680-81, 683; 4-874;
 8-1110, 1195
Porcupine-grass, in Australia, 6-1376
Pores, what they are, 3-693
Po River, of Italy, 12-2982, 3073-74, 3076, 3078
Port, production of, 10-2677
Porpoise, a marine animal, 4-1067, 1074
Porpoise-leather, 4-1074; 11-2834
Porrena, king of Etruscans, 14-3694
Port, a wine, 13-3343
Port, of ship, 18-4619
Portage Avenue, in Winnipeg, 16-4131
Portage la Prairie, Canadian town, 5-1280
Port Arthur, 18-3805
 see also Canada, railways and canals
Port Augusta, in Australia, 6-1374
Port-au-Prince, in Haiti, 23-6044
Port Colborne, Canadian port, 23-6120
Portcullis, badge of Margaret Beaufort, 4-855
Port Darwin, in Australia, 6-1372
Porteous, Captain John, character in "Heart of
 Midlothian," 7-1774
Porteous Riots, in "Heart of Midlothian,"
 7-1774
Porter, Anna Maria, 10-2622
Porter, Captain David D., American naval officer,
 12-3008
 during Civil War, 8-2051
Porter, James, English author, 10-2621-23
Porter, Sydney: see Henry, O.
Porter Road, at Annapolis, 18-4743
Porters: see Jack, house of
Portia, Shakespearian heroine, 2-330
Portico, of Carlton House, 5-1262
Portinari, Beatrice, and Dante, 20-5310
Port Jackson, Australian harbor, 6-1368
Portland, Conn., brownstone from, 20-5349
Portland, Me., fishermen from, 10-2602
 see also Canada, railways and canals
Portland, Oregon, description, 9-2383; 22-5757
 views in, 22-5719
Portland-cement, manufacture of, 16-4241
Portman, Dr., character in "Pendennis," 13-3517
Port Morris Station, on Long Island Sound,
 24-6352
Port Nelson: see Canada, railways and canals
Port-of-Spain, city on Trinidad, 23-6047
Porto Novo, king of, and council, 16-4307
Porto Rico, cadets and midshipmen from,
 18-4736, 4742
 fruit in, 3-650
 history, 2-272, 521; 8-2147, 2154
 island of, 23-6041, 6045
 lacemakers, 2-2146, 2157
 purchase of, 13-3494
 size of, 9-2382
 Washington's birthday in, 17-4466
Porto Rico, University of, exists, 17-4570
Port Philip, in Victoria, 6-1370
Portrait, a silhouette, 21-5641
 mysterious, 20-5183
 puzzle about, 1-110
"Portrait of a Man", by Sully, 16-4218
Port Royal, an island of Jamaica, 23-6046
Port Royal, N. B., history, 3-555, 558-59,
 4-894-95
 see also Annapolis
Port Royal, S. O., history, 2-276; 8-2017
Port Said, debarking point, 23-6179
Portsmouth, navy yard at, 23-5958
Portsmouth, Treaty of, and peace, 15-3805
Portugal, and Brazil, 2-272; 20-5370
 and Columbus, 1-62
 and Jews, 24-6334
 and New World, 2-282; 3-553
 and Philip II, 22-5850
 arms of, 7-1658
 colonies of, 14-3546
 flag of, 21-5194
 history of, 5-1115; 9-2288; 15-4027
 in Africa, 2-302, 16-4305, 4308
 rubber grown in, 14-3569
 story of, 13-3337, 3339-40, 3342, 3344, 3346-47
Portuguese, in America, 16-4078, 20-5370
 in Hawaii, 8-2150
 in India, 1-65; 6-1634, 7-1716; 16-1077-78
 in Persia, 15-3862
 in South America, 17-4512
 visit Australia, 2-363
Portuguese East Africa, 16-4305
Forum, Indian king, 5-1325-26; 7-1714
Positive, in photography, 1-46
Positivism, meaning of, 20-5291
Post, ball in the hollow, 21-5478
 immovable, 9-2354
 trees valuable for posts, 14-3747
Postage, reduction of, 13-3493
Postage-stamp, use of, 16-4112
Post-ball, a game, 23-6081
Postcard, how to pass through, 14-3558
Post-general, a game, 10-2591
Posting, a game, 18-4040
Post-office, work of, 13-3407-08
Post-offices, and Congress, 6-1390, 1435
Post-offices, U. S. Department of, 6-1436
Potash, and divers, 24-6312
 as fertilizer, 10-2686
 caustic, 7-1815; 24-6312
 chlorate of, and sugar, 9-2428
 for fertilizer, 16-4144
 in ashes, 10-2499, 2538
 in glass, 5-1264
Potassium, and yellow flames, 22-5892
 in gunpowder, 9-2244

GENERAL INDEX

- Potassium**, in milk, 11-2828
in soap, 12-3226
in spectrum, 11-face 2736, 2741
oxide of, 7-1816
specific gravity of, 15-3828
Potassium chlorate, a salt, 7-1817
Potassium cyanide, in gold-mining, 20-5324
Potassium sulphate, a salt, 7-1817
Potato, a food-plant, 1-15; 4-1020
and Colorado beetle, 12-3195
Burbank, 14-3562
cooking, 12-3100
cultivation of, 9-2423; 12-2995, 3217; 14-3554
digging, 15-3903
effect of boiling on, 21-5513
grown by Raleigh, 21-5410
marzipan, 14-3552
production of, in United States, 9-2386
rot of, 16-4115
source of alcohol, 7-1890
storing, 17-4387
sugar from, 3-704
water in, 5-1193-94
see also Sweet-potato
Potato-animal, a contest, 5-1303
Potato-crop, failure of, 21-5558
Potatoes, in South America, 17-4506, 4510
Potato-family, of plants, 17-4353, 4473
Potato-woman, and her pig, 5-1103
Potentia, meaning of, 14-3592
Potiphar, bought Joseph, 11-2934
Potlach, Indian feast, 20-5328
Potomac Army of the, during Civil War, 8-2048
Potomac River, in America, 2-528, 7-1692
Pot-plants, care of, 9-2266
Pots, and the Brahman, 23-6133
for plants, 13-3509, 15-3903
Potsdam, palaces of, 17-1549, 4553
Potter, Edward C., American sculptor, 18-4670
Potter-wasp, an insect, 11-2860
Pottery, ancient, 17-1539
Indian, 1-16-17
of French peasantry, 9-2420
of Greeks, 20-5204
pictured Egyptian, 18-4846
Pouches, of animals, 3-808; 4-873-79, 14-3668; 21-5663
of birds, 8-1972, 1976
of fish, 10-2479-80, 2609
Poulson, Valdemar, and wireless, 17-4448
Poultry, and Darwinism, 4-870
eaten by ants, 11-2974
in the United States, 10-2678
keeping of, 18-4711
mites of, 13-3364
see also Fowls, etc
Pounce, a dwarf, 2-2398
Found, for fish, 15-3812
Found, unit of weight, 14-2673
Founds, John, cobbler in Portsmouth, 15-3824
Found's Bridge, house at, 21-5629
Fontes, a pigeon, 9-2217, 2219
Fontaineau, settlement of, 3-556
Fowler, for guns, 23-6212
smokeless: see Cordite
Fowler-magazine, blown up, 18-4800
Powders, for headache, 22-5725
Powell-Cotton, Major, English traveler, 4-1016; 23-6000
Power, Captain, character in "Charles O'Malley," 12-2977
Power, fresco of, 7-1686
Power-loom, invention of, 15-4008
Powers, Elram, American sculptor, 18-4666-67
Powers, of Europe, 13-3247
that ruled world, 18-4794
Poyning's, and Ireland, 21-5557
Poyning's Act, on law in Ireland, 21-5558
Poynter, Sir Edward, his picture of Pompeii
ian sentinel, 23-6220
Possory: see Presburg
Possnott, temple of, 15-3031
"Practical Education", by Edgeworth, 10-2621
Preceptor, in "Tom Brown's School-days," 18-4140, 4142
Pragmatic Sanction, a compact, 11-2804
Prague, capital of Bohemia, 10-2594; 11-2896
Prarie, of Western Canada, 22-5945
Prarie-chicken, a grouse, 6-1562; 9-2342
Prarie-dog, a burrowing animal, 3-679, 682; 6-2343; 21-5575, 5577
Praries, treeless plains, 12-3129
Prarie-schooner, a wagon, 23-6057
Prarie-warbler, a bird, 9-2346
Prasovia, and the tsar, 10-2446
Prater, park in Vienna, 11-2899
Pratt, Bela L., American sculptor, 7-1688; 18-4675
Pratt, Pennsylvania, character in "Captains Courageous," 20-5376
Prawn, armored sea-animal, 10-2613
for aquarium, 17-4492
Proxites, Greek sculptor, 16-4172
Prayer-book, of Queen Catherine Parr, 4-869
Prayer, Book of Common, 19-5096
Prayer-wheels, of Buddhism, 15-3922
Praying-fags, 15-3932
Praying Indians: see Elliot, John
Praying-insects: see Praying-mantis
Praying-mantis, an insect, 12-3194; 13-3301, 3306
Preachers, persecution of, 7-1746
Preble, Edward, American naval officer, 12-3002
"Precaution", by Cooper, 6-1610
Preceptor, and the psalms, 12-3049
Preceptice, mules meeting on, 21-5512
picture, 2-430
Preceptate, what it is, 7-1696
Preese, Sir William, and wireless, 17-4448
Prefects (Préfets), of France, 9-2425
Prefectus vigilum, Roman fire-chief, 22-5756
Prejudice, meaning of, 13-3271
Prell, Hermann, his picture of Hermann, 10-2551
Pre-Raphaelite Brothers, group of painters, 23-6039
Presburg, ancient capital of Hungary, 10-2594; 21-5652
Presbyterians, a sect, 8-2043; 10-2556
anagram from Presbyterian, 13-5037, 5133
during Civil War in England, 7-1859, 1862
in Canada, 14-3733
in "Old Mortality," 7-1776
in Scotland, 21-5556
Prescott, Canadian town, 23-6123
Presents, choosing Christmas, 19-4926
of United States officials, 6-1435
Preserves, of fruit, 15-3901
President, and cadets, 18-4736
flag of, 21-5491
Presidents, administrations of United States, 13-3489
assassination of United States, 9-2382
election of, 9-2382
five famous, 3-779
of United States, election, powers, etc., 6-1392, 1396, 1434-36, 7-1686
"President's March", a tune, 12-3053
Presqu' Isle, Perry at, 12-3008
Press, censorship of the, 14-3614
freedom of the, 10-2596
Press, hydraulic, 23-6151
see also Printing-presses
Press-gang, and Admiral Campbell, 15-4026
in "Peter Simple," 6-2027-28
Pressel, John, German artist, 22-5773
Pressure, atmospheric, 15-3977; 22-5738, 5921; 24-6310
fluid, 15-3977-78, 3980-84
of gases, 22-5922
of liquids, 22-5922
sense of, 8-1984
Freston, Professor Thomas, married Mrs. Cleveland, 2-403
Freston-Fans, battle of, 6-1500
Fretender, the, character in "Henry Esmond," 13-3312
Fretender, the Old: see Stuart, James Francis Edward
Fretender, the Young: see Stuart, Charles Edward
Friam, king of Troy, 1-73, 78
Fribyloff Islands, foxes on, 19-5078
Price, Ellen: see Wood, Mrs. Henry
Price, problem concerning discount of, 6-1606
Richard, Captain, character in "Gulliver's Travels," 5-1333
Frickles, of fish, 10-2609-10
of plants, 20-5211, 6216
"Fride and Prejudice", by Austen, 10-2622
Fride, House of, in "Fairie Queene," 3-693
Friests, German, 10-2551
in "Canterbury Tales," 15-3939
in French Canada, 18-4831
in Tibet, 15-3932
killed by jaguar, 22-5808
of India, 7-1712
of Rome, 20-5274
tale told by priest, 2-494
Friate, first archbishop, 21-5652

GENERAL INDEX

- Primavera**, statue of, 18-4675
Primogeniture, meaning of law, 14-3781
Primrose, a flower, 4-844, 958; 8-2039; 16-4136; 18-4654, 4656; 19-5089 and polyanthus, 20-5235 bird's-eye, 19-5090
Primrose family, of plants, 16-4136; 19-4659; 20-5216
Primus, a berry, 14-3564
Prince, bride of the wandering, 5-1204 robber and little, 10-2523 who gave up his freedom, 15-4027 who was poor, 9-2386
Prince Albert, Canadian town, 21-5610
Prince Consort, statue of, 19-5040
Prince Edward Island, account of, 21-5401, 5543, 5546 and the Dominion, 5-1276, 1280 fox-farms on, 19-5078 history of, 1-224; 3-559, 756-58; 14-3732 population of, 14-3731 railways in, 9-2276
Prince Imperial, killed in Zulu War, 9-2291
Prince of Wales, three feathers of, 3-772
Prince Royal, during French Revolution, 16-4106
Prince Rupert, Canadian seaport, 22-3782 see also Canada, railways and canals
Princes, in the Tower, 8-1992; 19-4684
Princes' Island, in Africa, 16-4305
Princess, and goblin, 6-1483 and King Grislybeard, 8-1203 and the gold, 22-5774 golden ball of, 5-1353 search for the real, 2-394 silent, 18-4859 strange adventures of, 2-495 twelve dancing princesses, 2-354 who became a goose-girl, 11-2941
Princess Royal, a dance, 11-2805
"Princess Sonia", by Magruder, 8-2101
Princess-Vista, of Hudeau Hall, 6-1456
Princeton, battle of, 4-1004
Princeton University, story of, 17-4556, 4568
Principal Navigations, Voyages, etc., by Hakluyt, 21-5487
"Principles of Human Action", by Hazlitt, 18-4732
Pringle, Thomas, poems: see Poetry Index
Printing, and linotype, 4-943 art of, 19-4923 in Holland, 14-3547 men who gave us, 14-3607 with movable letters, 10-2556
Printing-presses, development of, 14-3611 in England, 3-776; 4-953, 13-3482
Printing-telegraph, a machine, 14-4574, 3577, 3580
Priores, in "Canterbury Tales," 2-199; 15-3939
Priories, of religious orders, 18-4791
Prism, and light, 17-4524, 20-5163 spectrum given by, 11-face 2736, 2740-41 use of, 1-237; 16-4230
Prison, Debtors', in "Little Dorrit," 10-2161 Elizabeth Fry and, 5-1329 English art concerning, 4-1442
"Prisoner of Chillon", by Byron, 12-2980
Prisoners, in Siberia, 15-3798
Prisoners' base, a game, 15-3966
"Prisoners of Hope", by Johnston, 8-2101
Prison-vessels, of Charleston, 3-784
Privateers, American, 4-1006; 6-1399, 12-3003; 13-3489 French, 3-559 of Confederacy, 8-2052 of England, 2-280 see also Pirates
Privilege, Viscount, character in "Peter Simple," 8-2038
Privilege, the Great, 14-3544
Probe, telephone, 17-4447
Problem, problem concerning, 5-1365 see also Little Problems for clever people
Process, cyanide, for gold mining, 20-5324 of steel-making, 22-5698-99 vulcanizing: see Rubber
Procopius, historian of Rome, 12-3188
Procter, Adelaide Anne, poems: see Poetry Index
Procter, Bryan Waller: see Cornwall, Barry
Procter (Henry A.), British general, 3-759
Proctotypes, insects, 12-3300
Procyon, a star, 10-2642, 2645
Produce Market, in Chicago, 22-5829
"Proffer at the Breakfast Table", by Holmes, 6-1617
Projecting-machine, of "movies," 20-5187
Projection, Mercator's, in map-making, 7-1767
Prometheus, painting of myth, 7-1688
"Prometheus Unbound", by Shelley, 22-6036
Prominences, of the sun, 8-2091-92
Promise, a key called, in "Pilgrim's Progress," 5-1185
"Promised Land", of the Bible, 24-6330
Pronghorn, antelope, 20-5351
Pronouns, and verbs, 13-3329 different kinds of, 12-3167
Proofs, of printer, 4-950
Propeller, driven by turbine, 10-2495 invention of, 10-2489, 2491
Property, in America, 6-1438 laws respecting woman's, 12-3121
Property-man, of film-studio, 20-5138
Property-room, of moving pictures, 20-5139
Prophecy, on Hallowe'en, 22-5923
Prophet of Allah: see Mahomet
"Prophet of the Great Smoky Mountain", by Craddock, 8-2101
Proportions, law of multiple, 7-1694
Prose, what it is, 3-711
Prospectors, for gold, 23-6093
Prospero, Shakespearian character, 3-329
Protection, of animals: see Animals, with wonderful coats
"Protection-money", 8-1499
Protector of the Commonwealth: see Cromwell, Oliver
Protels, as foods, 9-2365-66; 11-2730 class of compounds, 16-4116; 21-5513 in milk, 11-2827; 17-1585
Proteins, class of compounds, 21-5513 in milk, 17-4372
Protestants, and the Church of Rome, 10-2555, 12-3192 during Reformation, 14-3541 history, 1-134; 2-435 in Austria, 10-2556 in Cevennes, 9-2418 in Germany, 11-2770, 14-3653, 3656 in Great Britain and Ireland, 5-1115, 12-3112, 21-5625 in Maryland, 2-528 in Quebec, 20-5296 martyrs among, 19-5093 see also Huguenots
Proteus, character in "Faerie Queene," 3-701 Shakespearian character, 3-639
Prothonotary, a warbler, 9-2346
Protoplasm, artificial, 16-4116 burning of, 7-1647 in the eye, 15-4022 living matter, 5-1123, 1195-97, 12-4855 poisons of, 18-4691
Protractor, use of, 2-481
Provence, girl of, 9-2419
Proverbs, games with, 8-2143, 20-5354 stories illustrating, 22-5686
Provinces, Maritime: see Canada
Provincetown, on Cape Cod, 15-3849
Prudence, character in "Pilgrim's Progress," 5-1129
Prudence, fresco of, 7-1686
Prunes, where grown, 3-651
Prussia, King of, and the Netherlands, 14-3347 at Versailles, 21-5577 made German emperor, 7-1658
Prussia, and Austria, 10-2586, 11-2905 and France, 9-2289, 10-2561, 16-4102, 4106 and Poland, 11-2894 and Schleswig-Holstein, 14-3658 control of, 11-2762 history of, 10-2567, 2569, 2596, 2600 map of, 10-2592 Napoleon and, 10-2593; 13-3346 serfdom in, 10-2561 war with Denmark, 10-2597 see also Franco-Prussian War, Waterloo, battle of
Prussia, Duke of, successor of, 10-2560
Psalm, frontier on, 12-3194
Psalm, singing in Puritan churches, 12-3049 Twenty-third, in verse, 3-548 what it is, 2-389; 3-546
"Psalm-singer's Amusement", by Billing, 12-3049
Psammis, character in "Egyptian Princess," 23-5951
Psyche, and Cupid, 7-1909
Psyches, moths, 12-3021
Psittacus, a bird, 6-1659, 1561-62; 8-1618; 13-3444-45

CONCLUSIONS

[illegible]

Pyrae, see Baeolophus
Pyraea, a gold-colored butterfly
Pyraea, a genus of butterflies
Pyraea, a genus of butterflies
18-1898
of the laughing falcon, *Pyraea*
with paper, 18-1898, 18-1898
see also: *Pyraea*, *Pyraea*, *Pyraea*
Wynd, King, publisher of
Pyraea, a genus of butterflies
3443: 18-1898, 18-1898, 18-1898
Pyraea, a genus of butterflies
Pyraea, battle of 18-1898
Pyraea, and *Pyraea*, 18-1898
Pyraea, of Karnak, 18-1898
Pyraea, John, English parliamentarian, 18-1898
7-1898, 1894, 1895
Pyraea, Michael, a printer, 18-1898
Pyraea, a game, 18-1898
Pyraea, battle of the, 18-1898
of Egypt, 1-1898, 18-1898, 18-1898, 18-1898
4853: 18-1898, 18-1898, 18-1898, 18-1898
Pyraea, Mount, frontier of Spain, 18-1898
18-1898, 1894
Pyraea, character in "Faerie Queen", 18-1898
Pyraea, a plant, 18-1898
Pyraea, Greek, 18-1898
Pyraea, of Greece, 18-1898
Pyraea, Greek, 18-1898
Pyraea, and Britain, 18-1898
Pyraea: see *Pyraea* and *Pyraea*
Pyraea, a serpent, 18-1898, 1890, 1897

①

Quagga, extinct animal, 22-5002
Quagga, a clam, 10-2018
Quail, a bird, 6-1558, 1561, 1564; 8-2344, 24-2151
Quakers, in America, 2-525, 522-30, 532
Quaker and the Frenchman, 4-1064
religious sect, 5-1829; 22-6944-35
quality, of note, 12-3150
Quarry, layers of rock in, 11-2913
Quarter, the disappearing, 5-1561
Quarter-back: see Football
Quartering, kind of lumber, 12-3215
Quartz, a rock, 22-5887
for glass, 5-1264
scratches things, 12-3230
Quatrain, kind of poetry, 2-369
Quatre Bras, battle of, 17-4368
Quaver: see Music
Qay, English, in Petrograd, 12-5800
Quebec (city), attacks on, 2-559, 756; 5-892, 894,
898-99, 1000
battle of, 5-1114; 14-2768
description of, 5-1273; 20-5297; 23-6124
history of, 1-13, 224; 2-278; 3-564, 566; 10-4323
statues of, 2-229
Quebec (province), education in, 21-5401-02
French in, 20-5295
history, 1-224; 3-755-56, 758; 5-1270, 1276;
6-1454, 1457; 14-8732-34
parliament buildings of, 6-1454
population of, 14-3731
productions of, 23-6092, 6094-95
see also Canada, railways and canals,
Habitants
Quebec Act, and Canada, 24-6345
passed, 3-756
Quebec Bridge, building, 1-24; 2-2274
Quebec Menestrels, and Canada, 6-1278
"Quebec," by Warner, 5-2098
Queen, an uncrowned American, 19-4941
character in "Alice in Wonderland," 12-2096
of ants, 11-2967, 2968-70, 2973
of beehive, 11-2848, 2851-52
of Spain, the minstrel, 6-1526
who gave up her boy, 2-334
Queen Anne's Lace: see Carrot, flowers of wild
Queen Anne's War, in America, 4-894; 10-2660
see also Spanish Succession, war of
"Queen Bee," authorship of, 6-1478
Queen-bell, of beehive, 11-2848
Queen Charlotte Islands, in Pacific, 22-8759
Queen City of the Lakes: see Toronto
Queen Elizabeth, Sarah Bernhardt in, 20-5144
"Queen Mother," by Swinburne, 22-6094
Queen of the Adriatic: see Venice
"Queen of the May," by Tennyson, 22-4634
Queen-of-the-Meadows: see Meadow-sweet
Queensboro' Bridge, of New York, 1-25
Queen's College: see Rutgers
Queensland, gems from, 22-6352
in Australia, 6-1372

GENERAL INDEX

Queenston, Brock, died at 6-1399
Queenstown, in Ireland, 21-5555
Queen's University, in Kingston, Ont., 3-754;
 21-5402, 5405; 23-6122
Queen-wasp, life of, 11-2860
"Quentin Durward," story of, 8-1196
Question, problem concerning, 6-1522
Quessada, Spanish adventurer, 17-4512
Questionarius, Roman fire-official, 22-5756
Quetzal, a bird, 7-1757, 1764; 17-4406; 24-6380
Quetzalten, see Emerald
Quiberon Bay, battle of, 5-1114, 14-3768
Quicklime, action of, 17-4371
 what it is, 17-1697, 1818
Quickstands, cause of, 15-4017
Quicksilver: see Mercury
Quidi Vidi, village in Newfoundland, 24-6297
Quills, for pens, 13-3433
 in spinnets, 5-1088
 of cassowary, 6-1508
 of hedgehog, 2-514
 popguns made from quills, 19-4931
 use of, 11-2782; 13-3482, 3484

Quip, character in "Old Curiosity Shop," 11-2773

Quincy, city in Illinois, 23-6075

Quinnat, a salmon, 15-3454

see also Quinook

Quintianus, and St Agatha, 4-1029

Quintilla, old name of July, 17-4534-35

Quintus, son of, 16-4091

Quipus, knotted cords, 17-4510

Quirinal Hill, in Rome, 20-272

Quito, capital of Ecuador, 18-4606

"Qui transtulit sustinet," motto, 21-5492

Quivira, and Coronado, 2-276

Quota, game of, 4-1052; 14-3642

Quotation, unknown, 21-5451

"Quo Vadis," in moving-pictures, 20-7142

R

Ra, sun-god, 18-4846

Rabbis, and St. Jerome, 15-4080

in the desert, 17-4416

Rabbis' Daughter, statue of, 18-1675

Rabbit, and guinea-pigs, 17-4501

ears of, 23-6084

joke about, 13-3445

made at dinner-table, 9-2267

making stuffed cloth, 4-813

pest in Australia, 6-1372; 8-2085

teeth of, 12-3098

varieties and life-history of, 2-414, 512-13

2-2350; 21-5571, 5574, 5663

Rabies, a disease, 10-2470; 24-6364

Raccoon, fur-animal, 4-878-79; 19-5072; 24-6373

on canal-boat, 18-4768

Race, basket, 9-2264

clothes-pin, 9-1303

egg-and-fan, 9-2264

for hayfield, 16-1203

Marathon, 7-1819

menagerie, 18-4612

obstacle, 14-3642

on beach, 19-5122

three-legged, 5-1303

see also Games, Marathon, Swimming, Things

to make and to do, etc

Rachel, actress, 24-6336

Biblical character, 24-6330

character in "The Virginians," 13-3419

Rachel and Jacob, a game, 5-1303

Rack, instrument of torture, 4-1029

Racket, for tennis, 17-4378-79

Radiate College, part of Harvard, 17-1570

Radiation, of heat, 3-734, 4-1085; 16-4310

Radiation-pressure, of light, 7-1792; 10-2543; 15-3888, 3977; 20-5164

Radicals, chemical, 7-1818

Radiograms, from wireless outfit, 14-3582

Radioraria, marine animalcules, 9-2110

Radio-telegraph, or "wireless," 14-3582

Radish, a plant, 3-732; 12-2995; 13-3326, 16-1132, 4134

Radio, the principles of, 24-6391-98

Radium, an element, 3-568, 645; 5-1319, 6-1418, 1447; 19-5025

and helium, 19-5025

and uranium, 16-4276

and volcanoes, mountains, etc., 10-2657,

13-3249, 3254; 15-3905-06

atoms of, 6-1570

Radium, effects of, 11-2913, 2915; 12-3036

heat of, 6-1416; 12-3046, 16-4111, 4312

in the earth, 14-3671

in the sea, 10-2651

in the sun, 18-2607

Radius, bone of the arm, 10-2571; 16-4209

Radius, of a circle, 10-2686

Rae, Henrietta, picture of Ophelia, 21-5585

Rama, basket of, 21-5448

for tying, 3-732

Raft, Turkish army on rafts, 12-3190

Rafts, war-conference on, 14-3728

Raft-spider, habits of, 13-3359

Ragged-School, movement, 15-3824

Rags, for paper, 4-943-44; 10-2686

Rags and Tatters: see Mallow

Ragweed family, of plants, 20-5216

Ragwort, flowers of, 15-4016; 16-4204, 4208

Rail, the third, 24-6352

Railroad automobile, invention of, 21-5599

Railroads: see Railways

Railroad-Trafficmen, Brotherhood of, 16-4128

Rails, distance between, 9-2274

expansion of, 17-4398

manufacture of steel, 22-5702

train keeps on, 4-920

Rails, in wood-joints, 6-1520

Rails, marsh-birds, 8-1978; 9-2341

Railton, William, English artist, made Nelson

Column, 5-1262

Railway-car, on single rail, 23-8216

Railway-Conductors, Brotherhood of, 16-4128

Railwaymen, Brotherhood of, 16-4218

Railways, across continent, 9-2377

aerial, 3-750, 753

and canals, 18-4770

and colors, 17-4525

blocked by snow and flood, 2-311

construction halted by lions, 22-5808

curves of, 18-4019

early in England, 3-598, 604; 8-1117

first in United States, 3-605; 7-1840; 13-3491

for ships, proposed, 21-5594

in Africa, 2-297; 16-4306, 4309

in Alaska, 15-4060

in Asia, 15-3924

in Australia, 6-1374

in France, 9-2416, 2422

in German Africa, 11-2771

in Mexico, 17-4405

in New Zealand, 6-1490

in Panama, 17-4407

in Russia, 15-3798, 3802

in the Balkans, 13-3244

management of, 2-312

men who made, 3-599

of Canada, 9-2273

problems concerning, 5-1104

second, 3-603

should the lines join? 10-2588

standard gauge of, 10-2475

see also Toy-railway

Railway-train, built up from squares, 7-1855

Rain, affects rocks, 10-2654

and snow together, 8-2081

dampness before, 14-3778

disappearance of, 13-3505

heaviness of, 20-5398

in Great Britain, 7-1878, 12-3148

in Iberian peninsula, 13-3338

in Queensland, 6-1372

in winter, 12-3232

increases fragrance of flowers, 7-1878

life without, 7-1878

signs of, 20-5174

washes air, 7-1877

what it is, 2-428

Rainbow, cause of, 7-1877; 20-5166

legends of, 14-3652

seeing the other side of, 7-1654

Raindrops, and light, 20-5165

cohesion of, 3-694

formation of, 3-613, 694; 17-4371

velocity of falling, 14-3674

Rainfall, measuring, 12-2998

studied by Weather Bureau, 6-1437

Rain-gauge, to make a, 12-2593

Rain-water, effects of, 9-2007

Raisins, where grown, 3-650

Rajah, prince of India, 6-1638; 7-1717

Rajputs, in British Empire, 7-1713; 16-4081

Rake, of a mast, 18-4620

Raleigh, Sir Walter, and cloak, 4-860

and Spenser, 21-5487

GENERAL INDEX

- Raleigh, Sir Walter**, colonized America, 2-275,
281, 521, 4-955, 16-4078, 24-6271
explorations in South America, 23-6047
friends of, 21-5186, 4188
poems, see Poetry Index
story of, 4-854, 1035, 21-5108
Raleigh, capital of North Carolina, 8-2054;
23-5958, 24-6275
Ralph, a bird, 20-5180
Ralph, character in "Round the World,"
19-1910
Ram, a constellation, 10-2643
Ram, god Ammon as a, 18-1810
Ram: see Belim, the ram
"Rambler," a periodical, 18-4727
Rameses II, Pharaoh of Egypt, 18-4841, 1849
"true of, 19-5042
Ramezay, Claude de, Governor of Montreal,
6-1153
Ramilles, battle of, 10-2560
"Ramona," by Jackson, 8-2100
Ramsay, Allan, Scotch poet, 23-6032
Ramsay, Sir William, and aurora borealis,
20-5294
theory of smells, 18-1636
Ram's-head, a lady's shaper, 11-2886
Ranch, Canadian sheep penit, 1-229
Randall, James Wyder, and Maryland, 12-3053
poems, see Poetry Index
Rands, William Brighty, poems: see Poetry
Index
Ranger, a ship, 12-3001, 21-5193
Rangoon, ship, in "Round the World,"
19-1914
Rankin, Jeanette, representative from Montana,
12-3121
Rantaine, character in "Tenters of the Sea,"
16-1221
Ranunculi, plants, 7-1738, 20-5228
Rape, colza oil from, 3-869
Raphael, in "Paradise Lost," 22-5680
Raphael, Mrs. Mary F., picture of Queen
Guinevere, 13-3371
Raphael (Sanzio), burial of, 20-5277
falls of, in Vatican, 19-5103
Italian painter, 3-760-63, 11-1797, 17-1790,
1593
pictures of, 3-760, 5-1420, 1327
wrote in Ruine, 12-3080, 19-5097, 5099, 5101-01,
5107, 22-5833
Rapids du Platt, in St. Lawrence, 23-6123
Rapunzel, golden ladder of, 6-2319
Rashleigh, character in "Rob Roy," 6-1623
Raspberry, a fruit, 3-860, 14-3554, 3786,
19-5134
the flowering, 18-1761, 1763
"Rasselas," by Johnson, 18-1727
Rattios, in musical harmony, 19-1901
Ratisbon, German city, 11-2769
Rats, and Bishop Hatto, 16-1237
and plague, 2-512
and Valerian, 19-1951
Backlund poisoned by rat, 6-1382
eaten by ants, 11-2974
followed the Pied Piper, 2-370
various kinds of, 3-805-07, 4-1012
see also Bandicoot, Bats, Jerboa, Kangaroo,
Musk-rat
Rattler, ship, 10-2189
Rattles, of Indians, 11-2781
Rattles, plants, 15-3892
Rattlesnake, hibernation of, 24-6371
on Colonial flag, 7-1658, 21-5192
poisonous serpent, 3-682, 6-1383, 1385-86,
14-3625
rattle of, 6-1386
sucking bite of, 8-1956
Rattlesnake, ship, 4-872
Rattlesnake-weeds, plants, 16-1208
Raven, bird of prey, 7-1900-01
egg of, 7-face 1766, 1760
farmer and the, 23-6023
in story, 7-1905
"Raven," by Poe, 6-1616
Ravenel, Lord, character in "John Halifax,"
15-3973
"Ravenshoe," by H. Kingsley, 9-2329
Ravenwood, Lord of, in "Bride of Lammer-
moor," 6-1491
Ravine, a mile deep, 4-face 851
Rawlinson, Sir Henry, and rock of Behistun,
13-3481
Ray, electric, 10-2481-82
Rayleigh, Lord, of the Royal Society, 3-646
Raymond, Count of Toulouse, 6-1551
 Rays, blue, violet and ultra-violet, 12-3228
of light, see Light, X-rays
of sun, 12-3146
 Rays, fishes, 10-2481-82
Razor, sharp edge of, 9-2330
tiredness of, 15-1023; 21-5516
Razor-bills, birds, 7-1644-16
Razor-clam: see Clam
Razor-strop, mushroom used as, 19-4888
Read, T. Buchanan, poems, see Poetry Index
Reade, Charles, English author, 9-2321, 2328
Reading, Earl, Lord chief justice, 24-6337-38
Reading, Abbey of, 3-390
Reading, centre of, 15-3821
eyes and, 17-4526
school-lessons in: see Tables of Contents
Reaper, agricultural machine, 16-4150
Swiss, 22-5818
Reaping-machine, invention of, 7-1810,
11-2711
Rear-Admiral, naval rank, 23-6211
Reason, what it means, 2-518
Reaumur, meaning of, 8-1938
see also Thermometers, various
Rebecca, Biblical character, 24-6330
character in "Ivanhoe," 7-1666
"Rebecca of Sunnybrook Farm," by Wiggin,
8-2101
Rebellion, Bacon's, 2-530, 533
Canadian, 5-1271
men of the Great (British), 7-1857
Irish, 5-1278; 18-1622
Shays', 6-1391
Recalde, Inigo Lopez de: see Loyola, St.
Ignatius de
Receptacle, of flower and fruit, 16-1131
Reciprocity, between Canada and the United
States, 5-1271, 1281
Reckoning Robin, in story of "Grey and White
Castles," 7-1903
Recognition, power of, 19-5021
Recoll, of gun, 18-1812
Recollection, power of, 19-5021
Recollets, in Canada, 20-5296
Reconstruction, of seceding states, 8-2057
Records, Robert, English astronomer, 7-1677
Records, of talking machine, 21-5601-02, 5605
"Recreation," a painting, 7-1688
Recreation-pleas, New York's, 12-3222
Rectangle, meaning of, 20-5290
Rectum, use of, 9-2365
Reculvers, Castle of, 1-212
Red, a primary color, 1-166; 10-2696; 17-4524;
22-6891
and chlorophyll, 16-1111
color combinations of, 8-1951
color of deserts and Mars, 12-3127
effect of eye-rods, 17-1129
hated by wood-ben, 6-1509
heated person becomes, 14-3685
in fire-flame, 22-5892
in flag, 20-5397, 21-5491
imitates ball, 11-2803
light-waves of, 20-5243-44
Redbird, a grosbeak, 9-2346
Redbraes Castle, and Grizel Hume, 21-5620
Red Comyn, killed by Bruce, 12-3138
Red cross, how to make, 5-1229
Red-Cross, Knight of the, character in "Pensive
Queen," 3-697-99, 701
Red Cross Society, dogs for, 24-5321
money raised for, 13-3195
origin of flag, 12-2992
work of, 12-3123
Redemptioners, sent to America, 2-521
"Red Fox," by Roberts, 16-4227
Redgauntlet, Sir Edward, 6-1497
"Redgauntlet," story of, 6-1497
Red-head, a duck, 6-1461
Red-Indian Paint, a flower, 11-2879
"Red King," of England: see William Rufus
Red Lane: see Jack, house of
Red Men, chieftains, 24-19018
see also Indians, American
Redpoll, a bird, 13-3458
egg of, 7-face 1760
Red River, in Canada, 1-230
Red River Settlement, and Riel Rebellion at,
5-1278
Redruth, English town, 3-665
Reds, in Uruguay, 18-1610
Red Sea, between Asia and Africa, 15-3855;
16-1269, 1298, 1302
Redstart, a bird, 7-1762; 8-2109, 2111
nest of, 22-5751

GENERAL INDEX

- Red-top**, grown for hay, 9-2384
Reduction, what it means, 5-1245
Reduvius personatus, insect, 13-3454
Redwing, a bird, 8-2112
Redwood, use of, 20-5352
Reed, Major Walter C., and yellow fever, 12-3201-02, 3235, 3236
Reed, a grass, 5-1351; 12-3081; 15-3901
 for nest, 22-5746
 for pens, 13-3484
Reed-bird: see Bobolink
Reed-bunting, a bird, 8-2104, 2111
Reed-mace: see Cat's-tail
Reed-sparrow, nest of, 22-5753
Reed-warbler, a bird, 8-2107, 2111
 egg of, 7-face 1760
 nest of, 22-5747
Reef-knot, in rope, 15-3963-64
Reefs, of coral, 9-2406
Reemug, a magician, 16-1238
Reeves, Sims, tenor, 14-3769
Reeves, females of ruft, 8-1978
Reflections, and color, 20-5216
 from water, 12-3045
 light and, 13-3510
Reflex-action, of body, 11-2910, 18-4813; 23-6109
 tickling and, 17-4188
Reform, in England, 5-1119
Reformation, and Lunitans, 2-521
 effects of, 14-3541
 in England, 4-559
 in Europe, 10-2556, 11-2904
 in Netherlands, 22-5850
 in Spain, 13-3341
 in Switzerland, 12-2988
 martyrs of, 19-5093
 origin of the, 12-3190
Reform Club, in "Round the World," 19-4909
Reformed Church, of Scotland, 7-1776
Refraction, a property of water, 3-731
 errors of, 16-4331
 of sound, 17-4582
 see also Light, refraction of
Regan, Shakespearean character, 3-641
Regensburg: see Ratisbon
Regent's Park, tulips in, 15-3807
Regina, city in Canada, 1-232, 5-1280-81;
 21-5608, 5610
 headquarters Mounted Police, 18-1621
Regio, Father, and lace-making, 21-5525
Registration, of mail, 13-3112
Regnard (Jean F.), a traveler, 3-407
Regulus (Marcus A.), Roman general, 2-136;
 20-5274; 22-5707
Regulus, a star, 10-2639
Rehoboth, Israelite king, 24-6330
Reichenbach Falls, in Switzerland, 22-5846
Reichenstein, castle of, 16-4236
Reichsrath see Austria, Reichsrath of
Reichstadt, Duke of: see Home, king of
Reichstag: see Germany, Reichstag
Reign of Terror, in France, 5-1187, 9-2283-84;
 16-4104, 4107
Reindeer, domesticated animal, 2-293, 295,
 412; 14-3661, 15-3797
 in Alaska, 15-4060
 shadow-picture, 20-5353
Reine, of Jack's house. see Jack, house of
Reis, Johann, and telephone, 2-336; 17-4446
"Reisebilder", of Heine, 13-3393
Relationing, is thinking, 19-1996
Relay-race, for swimming, 11-3726
Reliefs, form of sculpture, 16-4171
"Religion", a painting, 7-1688
Religions, changes of, 10-2556
 freedom of religion, 10-2596
 Indian, 1-18
 of Egyptians, 18-4842
 of Persia, 20-5146
 of Scandinavians, 14-3652, 3658
 some founders of, 12-3023
 struggles in England, 4-856
 United States, constitutional amendment re-
 ferring to, 6-1437
Rembrandt (H. Van Rijn), Dutch artist,
 3-763-65
 pictures of, 3-765; 14-3541; 17-4589, 4591, 4595
Remedy, Jack: see Falcon, M.
Remigius, Bishop, and Clovis, 8-2068-69
Remington, Frederick, American sculptor,
 18-4675
Remington & Sons, and typewriter, 11-2718
Remus, legend of, 20-5272
 see also Romulus and Remus
Remus, dog, in "Masterman Ready," 8-2025
Remus, Uncle, 4-966; 6-1483
Renaissance, in Europe, 18-4172, 20-5308
Renard, et la chèvre, 21-5532
 et le lion, 21-5532
Renée, of France, 14-3695
 see also Ferrara, Duchess of
Reni, Sandro, and magic slippers, 10-2624
Renner, capture of, 10-2508
Rennet, effect on milk, 17-4585
 use of, 11-2828
Rennie, John, bridge-builder, 1-23
Renov, Nevada, on Truckee River, 9-2383
Repeater-watch: see Watch, repeater
Repetition, and memory, 18-4858
Representatives, Hall of, 7-1686
Representatives, House of: see United States
 House of Representatives
Reproach, Mock of Vile, in "Faerie Queene,"
 3-700
Reproducer, of talking-machine, 21-5601
Reptiles, age of, 9-2349, 11-2919
 brain of, 14-3687
 development of, 14-3666
 eaten by ants, 11-2974
 family of animals, 3-670-75; 4-873; 5-1209
 first on land, 14-3663
 fossil, 11-2918-19
 prehistoric, 1-50, 52
 sleep of, 24-6374, 6376
Republic, Batavian, 14-3547
 form of government, 6-1434
 the Dutch, 14-3546-47
 the school, development of, 24-6387
 see also France, Holland, Netherlands, South
 America, republics, United States, etc.
Republicans, of France, 9-2286; 17-4360
 see also Party, Republican
Repulsion, instinct of, 20-5188
"Requiem", by Mozart, 13-3289
Rebecca de la Palma, battle of, 7-1814-45
Reservations, the Indian, 11-2784
Reservoir, for water, 8-2116, 2119, 2123;
 21-5415
Resident, in India, 6-1638
Resin, and electricity, 8-2162
 for torches, 3-683
 prevents blurred ink, 22-5741
Resistance, path of least, 11-2909
Resolute, ship, 21-5458
Resonators, and sound, 19-5058-59
 and voice, 18-4093, 4096
 effect of, 18-4691
 use of, 14-3774
 what they are, 4-911
Respiration, or breathing, 7-1647
"Rest", a painting, 7-1688
Rest, for eyes, 17-4626
 state of, 14-3675
 see also Equilibrium
Rest, Happy Land of, of Indians, 5-1106
Rest-harrow, a plant, 16-4136
"Resurrection of Lazarus", painting, by Piombo,
 19-5106
Resurrection-plants, behavior of, 10-2581-82
 see also Rose-of-Jericho
Retable: see Pala d'Oro
Retina, of the eye, 7-1654; 11-2908, 2911; 12-3046;
 16-4263, 4231; 17-4425-27, 4523-25, 4586
Retorts, for coke, 22-5689
 for gas-making, 2-417-18, 420
Retreat, of the Ten Thousand, 19-5114; 20-5152,
 5208
Retriever, a hunting dog, 2-509-10; 24-6321, 6326
Return, the Great, of Jews, 20-5146
Reuss River, in Switzerland, 12-2986; 22-5858
Revenge, ship, 14-3714; 16-4183; 21-5411
Revere, Paul, his engraving of Boston Massacre,
 4-996
 warned Lexington, 4-996, 999; 20-5399
Reversing Falls, in New Brunswick, 1-224;
 21-5549
Reville Frères, fur-traders, 18-4834
Revolution, American, 24-6346
 history of, 2-400; 3-756; 4-998; 9-2280; 24-6253
 Indians during, 7-1841
 scenes of, painted by Trumbull, 7-1686
 two spies of, 15-3919
Revolution, of France: see France
Révolution, Place de la, in Paris, 8-2284, 2415
Reyes, General, rebellion of, 17-4404
Reynard, Sir, the Fox, 21-5569
Reynaud, Dr., character in "Abbé Constantin,"
 18-4755
Reynaud, Jean, character in "Abbé Constantin,"
 18-4752

GENERAL INDEX

- Reynolds, Sir Joshua**, English artist, 3-763, 765-66; 10-2619; 16-4157; 17-4591, 4596; 18-4727, 4729
his pictures, 3-765; 6-frontis.; 13-frontis.
- Rhaecoporus**, a kind of toad, 5-1216
- Rhampsinitus**, King, treasure of, 7-1912
- Rhea**, a bird, 6-1504, 1506-07
- Rheims**, cathedral of, 16-1173; 20-5378
- Rheingrafenstein**, Castle of, story of, 16-4240
- Rheinhard**, of Reichenstein, 16-4236
- Rheinstein**, castle of, 16-4236-37
- Rheumatism**, dampness and, 18-4690
- Rhine River**, as frontier, 10-2559, 2561
in Europe, 10-2550, 2594; 11-2763, 2765; 12-2982; 14-3539; 22-5848
legends and tales of, 16-4235
scene on, 16-4234
- Rhinoceros**, an animal, 4-1010-13
and horse, 23-6062
capture of, 24-6242
charges of, 22-5804
fossil, 11-2919
hides for leather, 11-2834
horn of, 4-1012
in Africa, 16-4306
prehistoric, 1-13
stories about, 1-216
young, 21-5665
- Rhinoceros-bird**, and rhinoceros, 4-1013
- Rhodanthe**, changed into rose, 12-3310
- Rhode Island**, and Constitution, 6-1392
colony of, 3-528
cotton manufactures of, 10-2684; 19-4886
flag of, 21-5493
flower of, 22-5816
history of, 12-3120
iron in, 22-5688
no state university, 17-4370
- Rhode Island College**: see Brown University
- Rhode Island Red**, kind of hens, 18-4712
- Rhodes**, island of, 20-5202
statues on, 4-910
- Rhodesia**, in Africa, 16-4308, 23-5999-6001
- Rhodes Scholars**, from Canada, 21-5610
- Rhododendron**, a shrub, 18-3993, 17-4556, 4565
in Asia, 15-3924
state flower, 22-5816
- Rhodopis**, character in "Egyptian Princess," 23-5951
- Rhone River**, Hannibal crossing, 20-5275
in Europe, 9-2416, 2418, 3122, 24-6260
- Rhubarb**, cultivation of, 12-3217, 14-3551, 3786
- Rhyme**, what it is, 1-101
- Rhymes**, a game, 1-253; 21-7441
counting-rhyme, 2-458
- Rhythm**, of poetry, 3-711
- Rialto Bridge**, 5-1170-71
- Ribbon-fish**, of the deep sea, 1-221, 10-2481, 2483
- Ribbons**, cushion-cover of, 13-3441
- Ribbon-work**, table-square in, 8-2139
- Ribiera**, Ines de, character in "Charles O'Malley," 12-2977
- Ribs**, broken, 17-4382
of snakes, 6-1379, 17-4487
of the body, 6-1594; 10-2466-68, 16-4200
- Ricardo**, David, political economist, 24-6338
- Rice**, Alice Hegan, American writer, 8-3102
- Rice**, Cale Y., dramatic poet, 8-2102
- Rice**, a food-plant, 5-1839; 8-1930; 11-2947, 2949
in American colonies, 4-994
in cultivation, 8-2151, 2154-55
in India, 6-1633-34
in Louisiana, 23-5960
in New Guinea, 6-1492
used for bread, 5-1132
- Rice-bird**: see Boholink
- Rice Lake**, in Canada, 1-228
- Rice-water**, for invisible ink, 5-1302
- Rich**, Edmund, archbishop of Canterbury, 16-4797
- Richard**, brother of Edward V, 8-1993
- Richard**, character in "Rob Roy," 6-1623
character in "The Chimes," 9-2299
- Richard**, flight of, 20-5393
- Richard**, in the Witch's Ring, 2-505
- Richard**, son of Edward IV, 18-4684
- Richard I**, the Lion-hearted, or Coeur-de-Lion, King of England, 3-594; 12-3136
and Robin Hood, 16-2633
device of lions, 7-1657
discovered by song, 23-6195
forgave Gurdun, 8-2019
in Crusades, 18-3860
in "Ivanhoe," 7-1669
- Richard I**, story about, 6-1496
- Richard II**, king of England, 3-768, 773; 4-1042; 5-1253
imprisoned Squires, 18-4684
- "Richard III."** by Shakespeare, 21-5584
- Richard III**, king of England, and the Princess in the Tower, 8-1992-93
reign of, 3-776; 4-855; 12-4684
- "Richard III."** by Shakespeare, 21-5584
- Richard**, of Cornwall, and Jutta, 23-6191
- Richard**, the Fearless, duke of Normandy, 3-478
- Richardson**, Samuel, English author, 7-1746, 1748
- Richborough**, castle of, 1-212
- Richellou** (Armand J. I.), Cardinal, French statesman, 3-556; 8-2074
- Richellou River**, battle on, 3-556
see also Canada, railways and canals
- Richmond, Va.**, as capital of Confederacy, 8-2046-48, 2050
capital of Virginia, 23-5957
Capitol Square in, 23-5956
- Richmond Castle**: see Richmond Hill
- Richmond Hill**, enchanted cave of, 8-1995
lairs of, 14-3769
- Rickets**, disease, 11-2829
- Riddle-me-ree**, a puzzle, 21-5523
- Riddles**, in rhyme, 17-4385; 21-5451
riddle of the sphinx, 11-2752
- Rideau Canal**, in Canada, 1-226; 9-2272, 2278; 16-4131
- Rideau Falls**, discovered, 3-556
- Rideau Hall**, residence of Canadian governor-general, 6-1456
- Rideau River**, in Canada, 1-226
- Riders**, on the wind, 1-173
- Riding-Hood**, Little Red, story of, 9-2178
- Ridley**, Nicholas, martyrdom of, 19-5094-95
- Riel**, Louis, and Riel rebellion, 5-1278
- Rife-stocks**, of walnut, 19-5031
- Rigby**, and Latham House, 18-1746
- Rigel**, a star, 10-2645
- Riggs**, George C., married Kate D. Wiggin, 8-2102
- Right-handedness**: see Brain, Hands, use of
- Right of Search**, and War of 1812, 3-758
- "Right of Way,"** by Parker, 16-4327
- Rights**, Declaration of, 4-998
- Rights**, Woman's, fight for, 12-3121
- Rigidity**, of matter, 14-3775
- Rigi Mountain**, in Switzerland, 12-2982; 22-5847
- Rise-o'-Marlow**, a dance, 11-2805
- Riss**, Jacob A., on children, 12-3222
- Riley**, James Whitcomb, American poet, 6-1621
poems: see Poetry Index
- "Rime of the Ancient Mariner,"** by Coleridge, 23-6034
- Rinderpest**, disease of cattle, 24-6368
- Rinehart**, Mary Roberts, American writer, 8-2103
- Rinehart**, William H., American sculptor, 18-4668
- Ring**, and corn trick, 5-1248
annual, of rice, 4-919
of Aladdin, 1-90
the witch's, 2-505
see also Anchor, Dances, Fairy-rings, Saturn, Smoke-rings
- Ring-cartilage**, in larynx, 24-6355
- Ring-dove**, a bird, 9-3217
- Ring**, Hunt the, a game, 10-2589
- Ring-spinner**, a machine, 19-4890
- Ringstetten Castle**, in story, 15-4054
- Ringstrasse**, street in Vienna, 11-2899
- Ring-taw**, a game, 19-5132
- Rio de Janeiro**, capital of Brazil, 18-4609, 20-5370
French at, 20-5368
- Rio de la Plata**, in South America, 20-5361, 5365
- Rio Grande**, boundary of United States, 7-1842
- Rion**, Capt. Edward, in battle of the Baltic, 7-1872
- Ripple**, on water, 4-1081
- Ripple-marks**, in sand, 16-4119
- "Rip Van Winkle,"** by Irving, 6-1610; 18-4779, 4880
- "Rise of Silas Lapham,"** by Howells, 6-1621
- Ritchie**, Lady, daughter of Thackeray, 6-2525
- Rivadavia**, Argentine statesman, 20-5362
- River-pirates**: see Pike
- Rivers**, Lord, and Edward V, 18-4685
- Rivers**, fish of, 5-1290; 10-2699
- Row**, courses, etc., 2-451; 6-1590; 8-2009-10; 15-6026; 22-6890
freshness of, 5-1288

GENERAL INDEX

- Rivers**, of Australia, 6-1274
 river under a city, 20-5193
 seeing the bottom of, 4-1084
 six flowing into a bay, 8-2362
 what they are, 8-2118
Riverside Drive, in New York, 19-5012;
 21-5428
River Towns, of Connecticut, 2-532
Riviera, on the Mediterranean, 8-2422
Rivière, Briton, his picture of Rispah, 22-5918
Rivière du Loup: see Canada, railways and
 canals
Rispah, love for sons, 22-5915
Risio, David, murder of, 12-3142
Rizzo, Antonio, Italian artist, 8-1172
Roach, a fish, 10-2705
Road, along a country, 15-2943
 and a king, 16-4126
 carried off by collectors, 16-4290
 higher in the middle, 1-168
 in Alaska, 15-4060
 in Switzerland, 12-2991
 macadamised, 1-168
 Roman, 1-168, 210; 2-470
 sides appear to meet, 6-1592
 stone in, 24-6283
 see also Music, lessons
Road-runner, a bird, 2-2343
Roanoke, Island of, colony on, 2-281, 521;
 4-959; 21-5410; 22-5958
 lost colony of, 24-6271
Roar, of sea, 17-4583
Robber, and little prince, 10-2523
 and the monk, 24-6291
 and the soldiers, 11-2806
Robber-Knights, of Germany, 10-2553, 2555
Robbia, Andrea della, Italian artist, 11-2797
Robbia, Giovanni della, Italian artist, 11-2797
Robbia, Luca della, Italian sculptor, 11-2787,
 2797; 16-4173
Robert, duke of Normandy, 6-1551
Robert, son of Earl of Huntingdon: see Hood,
 Robin
Robert I, the Bruce, king of Scots, 1-130; 3-770;
 12-3135-36, 3138
 puzzle-picture, 4-930
Robert II, king of Scots, reign of, 12-3138
Robert III, king of Scots, reign of, 12-3138
Robert Guiscard, leader of Normans, 6-1551
Roberts, Charles G. D., Canadian author,
 16-4327; 21-5407
Roberts, Frederick S., Lord, march to Kandahar,
 15-3927, 3932
Robertson, G. H., picture by, 21-5435
Robertson, James, and Tennessee, 7-1832
Robertson, William de, settlement of, 2-554
Robespierre, Maximilian, and French Revolution,
 2-3286; 10-4099, 4107-08; 17-4359
Robin, a bird, 2-505; 2-2107-08, 2110, 2114;
 8-2350; 12-3464
 English, 7-face 1760; 22-5747
 see also Baltimore-oriole
"Robin Adair" song, 14-3770
Robin Goodfellow, in story of "Fairyfoot,"
 15-4049
Robin Hood: see Hood, Robin
Robinson, Ralph, translator, 15-3942
Robinson Crusoe, island of, 2-508
"Robinson Crusoe", by Defoe, 5-1222-23;
 7-1745-46
 see also Selkirk, Alexander
"Rob Roy", by Scott, 6-1497, 1623
Rob Roy, problem of, 21-5451
Rob Roy, ship, 10-2492
Robson, Amy, story of, 6-1496; 12-3880
Robson, Sir John, daughter of, 12-3880
Robusti, Jacopo: see Tintoretto
Roce, imaginary birds, 1-217; 2-791
Rocheambeau (Jean M. D. de V., Count de), and
 America, 4-1008-09
 and picture of surrender of Cornwallis,
 21-5587
 and Washington's birthday, 17-4464
 portrait, 4-937
Rocheport, Georges, his picture of Huns
 pillaging villa, 12-3551
Rochevost, in England, 8-589
Rochevost, Bishop of see Gundulf
Rochevost, Cathedral of, in England, 5-1254
Rock-bass, a fish, 10-2701
Rock-crab: see Crab
Rock-crystal, lens of, 2-2331
Rock-foes see Rock-pigeon
"Rocked in the Cradle of the Deep", by
 Willard, 12-3120; 14-3768
Rockefeller Institute, for scientists, 24-6363,
 6365
Rocket, an engine, 2-598, 603, 605
Rocket, in bridge-building, 1-24, 29
 way of, 20-5291
Rock-foil, flowers, 8-1098
Rock-garden, making a, 8-1098; 8-1944, 2089
Rockies, the Canadian, 14-3730; 22-5777
Rocking-stones, reason of, 1-14
Rockling, a fish, 6-1421
Rockminster, Lady, character in "Pendennis,"
 13-3520
Rock of Tarik: see Gibraltar
Rock-oil: see Petroleum
Rock-pigeon, a bird, 8-2218-19
Rock-roses, flowers, 8-1088
Roofs, breathing of, 17-4583
 formed by fire, 11-2919
 how to know, 20-5349
 in Bay of Fundy, 1-225
 kinds of, 2-426; 4-917; 12-3046
 making a collection of, 16-4290
 radium in, 10-2653
 rain melts, 10-2654
 record of the, 11-2915
 road through, 22-5843
 that look like men and animals, 5-1311-12
 traces of early life on, 1-187
 voice that came from rock, 10-2588
Rock-salt, deposits of, 16-4017
Rock-sapphire, a plant, 20-5210
Rocky Mountains, birds of, 7-1802
 crossed, 6-1397
 in Canada, 1-232; 2-2275; 15-3904
 in North America, 1-10
Modents, and horse, 23-6082
 family of animals, 2-679-80; 4-1011; 14-3668
 teeth of, 2-2079
Roderick Dhu, concealed men, 12-3508
"Roderick Random", by Smollett, 7-1751
Rodgers, C., long-distance flight of, 1-117
Modin, Auguste, French sculptor, 10-4174, 4181
 his statue of Thought, 19-5079
Mods, of the eye, 17-4425, 4427, 4523
Moë, Frederick, picture of Nelson at Yarmouth,
 17-4363
Moë, Sir Thomas, ambassador to India, 7-1716
Moë, fish-eggs, 10-2601, 2603
Moebius, J. A., bridge-builder, 1-25
Moebuck, variety of deer, 2-412
Mogers (John), martyrdom of, 19-5094
Mogers, Randolph, doors of, 7-1685
Mogers, Samuel, poems: see Poetry Index
Mohand, Earl of Warwick, in story, 5-1356
Mohrort, German city, 11-2766
Moi, Le, le noble, et le paysan, 15-4056
Mokesmith, John, character in "Our Mutual
 Friend," 10-2462
Moland, legend of, 2-2068; 12-3340
 song of, 2-2068
 sword of, 12-3344
Moland (de la Platière), Madame (Jean M.), and
 French Revolution, 10-4099, 4105, 4108
Roller-in, in hockey, 19-5028
Roller-mills, for wheat, 11-2717
Rollers, for printing press, 14-3615
Roller-skates, of spools, 17-4386
Rolling-machines, for steel, 22-5702
Rollo, First Duke of Normandy, 2-2069; 14-3652
 the grandson of, 20-5393
"Roll on, Silver Moon", by Turner, 12-3050
Roman Catholic Church, and Society of Jesus,
 4-894
 called Popery, 7-1863
 history of, 1-134; 2-435; 10-2552, 2554, 2556;
 12-3186, 3188, 3192
 in Balkans, 12-3245
 in Canada, 20-5296, 5303
 in Spain, 12-3344
Roman Catholics, and Gunpowder Plot,
 7-1806-07
 and Huguenots, 2-2075
 during English Civil War, 7-1863
 in Austria, 10-2558
 in Canada, 2-755; 14-3732; 21-5401
 in France, 2-2072
 in Germany, 11-2770
 in Ireland, 2-1115; 21-5557
 in Maryland, 2-528
 in Scotland, 12-3142
 martyrs among, 19-5093
Romanov, dynasty of, 14-3724
Romans, King of the, title of, 10-2556
Romans, and dogs, 24-6316
 and football, 24-6277

GENERAL INDEX

- Romans, and gems, 24-2581, 2582
and Greek art, 12-4172
and iron, 22-5687
and mushrooms, 22-4822
and Parthians, 22-5155
and Sassanians, 20-5155
and Scandinavia, 12-3653
and slaves, 11-2939
architecture of, 2-608, 610, 612
battle with Latins, 10-2686
cement of, 12-4241
devotion of a Roman, 10-2686
Egyptian art under, 12-4172
founded Florence, 11-3787
had rabbits, 2-513
in Egypt, 2-298
in England, 1-208; 2-1253-54; 2-2067
in Rhine valley, 10-2550
in Spain, 12-3338
leather and, 11-2882
locks of the, 24-6357
pottery of, 17-4539
used coal, 4-832
writing of, 12-3432, 3434
Rome, King of, son of Napoleon I, 2-260;
2-2288
Rome, and Carthage, 22-5707
and Egypt, 12-4853
and Greece, 20-5209
and Holy Land, 2-1549
and the Goths, 2-1167; 10-2550-51
and the Jews, 24-6322
attacked by Etruscans, 12-3694
builders of, 2-1253
caged wolf of, 21-5682
capital of Italy, 12-3072-75, 3084, 3086
emperors of, 2-535
empire of, 12-3074, 3186
famous makers of, 12-5097
firemen of, 22-5756
first great men of, 2-435
geese who saved, 2-576
glass in, 2-1263
gold of, 20-5318
grandeur that was, 20-5271
history of, 2-635, 2-1228, 2-2020 14-3594,
17-4535
les oies qui gardaient, 12-3881
monuments of, 12-5041
presses in, 12-3610
sandals in, 12-3106
senate of, 2-438
stories of, 2-2315; 20-5185
see also Italy, Romans, Romulus and Remus
Rome, city in New York, 12-4767
Rome, Bishop of, 12-2552-54, 12-2076
Rome, Church of, see Roman Catholic Church
"Romeo and Juliet," by Shakespeare, 2-447;
21-5584-85
Rome, University of, medical school, 12-4630
"Romola," by Eliot, 12-2626
Romulus, dog in "Masterman Ready," 2-2025
Romulus and Remus, legend of, 2-435; 20-5272;
21-5682; 22-5926
Ronalds, Sir Francis, and telegraph, 17-4440-42
Ronnie, in story, 12-5109
Ronsard, Pierre de, poems: see Poetry Index
Ronsard, in legend, 12-4235
Röntgen-rays, of light, see X-rays
Röntgen, William, and X-rays, 24-6366, 6370
Rood, Thomas, a printer, 14-3612
Roof-gardens, for children, 12-3222
Roof, King of the Goides, 12-4677
"Roof of the World," see Pamir Plateau
Roosters, in "David Copperfield," 11-2861
of herons, 2-3341
Rooks, birds, 7-1661
egg of, 7-1760
nest of, 22-5750
see also Corbant, the Rook
Room, Blue, East, etc.: see White House
forbidden, 7-1696
things wrong in, 12-3219; 12-3228
Roosvelt, Theodore, administrations of,
22-3452, 3494
and Russo-Japanese War, 12-3405
as president, 2-2375, 2382
book of, 22-5305
in Africa, 12-4304
succeeded McKinley, 2-2382
Roosvelt, ship, 21-5462
Roosvelt Dam, in Arizona, 11-2710
Rooster-fight, a game, 12-5152
Roos, George F., songs of, 12-3052
Root, growth of, 2-1886; 12-3906
Root-crops, in Sweden, 12-3259
storage of, 17-4357
Root-parameters, plants that are, 12-3259
Rope, a piece of, 12-4098
for telling time, 2-3241
straightness of, 12-3259
swinging of, 12-4344
what the letter is with, 2-2288
Roper, Margaret, wife of Thomas Moore,
2-1220
Roper, William, husband of Margaret Roper,
2-1221
Rope-walk, for rope-making, 12-4098, 4611
Rouquet, in croquet, 17-4491
"Rory O'More," song, 12-3771
Rosa, Salvatore, Italian artist, 12-3052, 3053
Rosaland, Shakespearean character, 2-447;
21-5589
Rosaline, Shakespearean character, 2-447
"Rosamond," by Swinburne, 22-4840
Rosa, Monte, Alpine peak, 12-3942
Rosas, Juan Manuel, Uruguayan leader,
20-5362
Roscoe, William, poems: see Poetry Index
Rose, a plant, 20-5227
color of, 22-5891
cultivation of, 4-931; 2-1249; 2-2140; 12-3425;
14-3786
drawing a, 12-3470
emblem of England, 22-5816
legend of the, 12-3210
of Persia, 12-3683
paper, 12-4198
perfume from, 2-1515
state flower, 22-5815-16
Tudor, 4-855
used in pattern, 12-3220
varieties of, 7-1853, 2-2020; 12-3524; 22-4251
see also Guelder-rose
Rose-bay, see Rhododendron
Rose-chaffer, injurious insect, 12-3194; 12-3203
Rose Cottage, in "John Halifax," 12-3271
Rosecrans, Gen. William S., during Civil War,
2-3050
Rose-family, of plants, 12-4123
Rose-Maiden, a story, 2-1152
Rosemary, a plant, 17-4480; 22-5816
Rose of Jericho, legend of, 7-1705
Rose of Sharon, a flower, 12-4125
Rose of the Sea, in story, 2-795
Rose-root, a plant, 12-4752, 4760
Roses, Wars of the, English, 2-775-76; 4-855,
21-5554, 22-5816
Rosetta Stone, of Egypt, 2-688, 12-3481, 3482;
12-4844, 4853; 12-4855
Rosette, in clay, 22-5004
plants that form a, 12-4012
Rosewood, how to know, 12-5034
Roskilde, old capital of Denmark, 12-3660
Ross, Mrs. Betsey, made flag, 7-1658, 17-4487;
21-5493
Ross, Colonel, and flag, 21-5493
Ross, Major Donald, and malaria, 12-3201-02
Ross, General, burned Washington, 2-1859
Ross, Sir James (G.), Arctic explorer, 21-5457,
5458, 5459, 5464
Ross, Sir John, Arctic explorer, 21-5457, 5458,
5459, 5464
Rossbach, battle of, 17-4555
Rosse, Lord, telescope of, 11-2844
Rossetti, Christina, English poet, 22-5774,
22-6039
poems: see Poetry Index
Rossetti, Dante G., English poet and painter,
22-6039
poems: see Poetry Index
Rossini, Gioacchino A., composer, 12-3294
Rostrom, Captain, of the Carpathia, 12-3572
Rostwell, city in New Mexico, 22-5716
Rot, of potatoes, 12-4115
Rotation, spinning motion, 12-3429
Roth, wrote tune of "Hail, Columbia," 12-3053
Rotterdam Forest, see Sherwood Forest
Rotterdam, Samuel Nathan, banker, 24-6326
Rotterdam, Lake, and kangaroos, 4-875
Rotterdam, William Meyer, banker, 24-6326
Rotterdam, Lake, in New Zealand, 2-1488
Rotterdam, port of Holland, 12-3636, 3640, 3642,
3544, 3545
Rotunda, of Mammoth Cave, 4-1806
Rouen, ancient capital of Normandy, 2-246-47,
774; 2-3049; 2-3413, 3426, 3432; 21-2242
butcher of, 12-3507
Rouen, Cathedral of, in France, 12-3173
Rouge, Cays, in Canada, 22-6124

GENERAL INDEX

Roumanians, in Canada, 14-2782
 Roundheads, in "Feveril of the Peak," 6-1487
 Parliamentary troops, 2-528; 7-1865
 see also Puritans
 "Round the World in Eighty Days," by Verne, 19-4908
 Roundillon, Countess of, Shakespearian character, 2-328
 Rousseau, Jean Jacques, French writer, 16-4099-4100, 4155; 20-5212
 Rove-beetle, value of, 13-3303, 3306
 Rowland's Folly, at Edmonton, 23-6144
 Rowan-tree, in Scottish legend, 14-3524
 see also Mountain-ash
 Row-boat, capsizing, 15-3886
 Rowena, lady, heroine of "Ivanhoe," 7-1662
 Rowland, in the "Witch's Ring," 2-505
 Rowlands, M. M. see Stanley, Henry Morton
 Roxburgh, and death of James, 12-3140
 Roxbury, settlement of, 23-6114
 Roy, garden of, 23-6097
 Royal Alexandra Bridge, in Ottawa, 2-2272
 Royal Americans, a garrison, 1-197
 Royal Exchange, the, in London, 5-1258
 Royal George, a ship, 2-480
 Royal Numism. Society, medals of, 16-4090
 Royalists, British, 2-523; 7-1859, 1864-65; 14-3693; 18-4744, 4746, 4868
 French, 6-2286; 18-4106, 4284; 17-4259
 in "Old Mortality," 7-1778
 of Argentina, 20-6161
 Royal Military College, of Kingston, Ont., 3-754
 Royal Mount, in Montreal, 1-226; 3-554, 5-1275; 7-1769
 Royal Society, of London, 4-865
 Royal Victoria College for Women, in Montreal, endowment, 16-4326
 Royal Victoria Hospital, in Montreal, endowment of, 7-1768; 16-4326
 Moseraie, farm of, in "Abbé Constantin," 12-4761
 Rozier, Filâtre de, and balloon, 22-5810
 Roziante, horse, 4-901, 987
 Rubayat of Omar Khayyam, translation of, 23-6038
 Rubber, and the Congo Forest, 12-3130
 development of, 11-2714
 source of, 14-3569; 20-5370; 22-5793
 trade in, in Africa, 16-4298, 4305
 transportation of, 18-4606, 4610
 tree, of Panama, 2-2159
 Rubber-process, vulcanizing, 14-3570; 22-5794
 Rubbish-heaps, articles found in, 14-3651
 Rubiliter see Tourmaline
 Rubens, Peter Paul, Flemish painter, 3-762-63; 17-4581
 pictures of, 3-767; 8-frontis.; 14-3541
 Rubicon River, crossing the, 2-440; 20-5280
 Rubinstein (Anton), Russian pianist, 12-3052; 24-6336
 Ruby, a precious stone, 24-6377-81
 Ruby-throat, a hummingbird, 2-244; 13-3157
 Rückstuhl, F. W., American sculptor, 16-1675
 Rudder, of a ship, 16-4618
 Rude (François), sculptor, 18-5048
 Rudge, Barnaby, character in "Barnaby Rudge," 11-2778
 Rudolph I, of Hapsburg, and cup of water, 2-475
 elected emperor, 16-2560; 11-2895, 2898
 war with Berne, 12-2986
 Rudolph II, Holy Roman Emperor, and Brahe, 7-1678
 Rue, Warren de la, invented process for oil, 3-668
 Rue-anemone, a flower, 11-3880
 Rueth, the Swiss oath at, 12-2983, 2988
 Rufta, birds, 2-1978-79
 Rufus Cornelius, house of, 23-6237
 Rugby, in "Tom Brown's Schooldays," 16-4127-36
 Ruhr, problem concerning, 4-850
 Ruhr Valley, coal-fields in, 11-2766
 Ruie, the golden, 12-3028
 "Rule, Britannia," song, 14-3766
 Rules, straightness of, 22-4081
 Rum, in West Indies, 22-6046
 making of, 6-1392
 Rumania, accessions to, 12-3247
 and Great War, 12-3247
 and Transylvania, 11-2895
 formed, 12-3240
 Rum-pot-still-skin, story of, 3-575-77; 6-1478

Rumsey, James, steamboat of, 10-2486
 Running, and digestion, 12-3186
 and heart-beat, 19-5036
 Running-suit, how to do, 6-489
 Runnymede, island in Thames, 2-528
 Runts, pigeons, 9-2320
 Rupert, Prince of, the Palatinate, during English Civil War, 7-1668, 1865-68; 12-4746, 4822
 Rupert's Land, in Canada, 5-1278; 12-4832, 4834
 Rurik, Viking chief, 14-2722
 Rush, William, American sculptor, 16-4665
 Rush, flowering: see Flowering-rush
 why gale leaves standing, 4-921
 Rushers: see Football
 Ruslight, for lighting, 6-1542
 Ruskin, John, comments of, 6-1584; 7-1792; 10-2460; 11-3791; 12-3066; 14-3646; 15-3913, 4033; 20-5303
 English writer, 5-1174; 6-1439, 1481, 1527; 16-4165, 4161, 4164; 18-4734
 Russell, Clark, novelist, 14-3762
 Russell, Henry, song-writer, 14-3765, 3768
 Russell, Lord John, colonial secretary, and Canada, 2-1272
 Russels: see Brown
 Russia, alphabet of, 13-3482
 and Alaska, 2-2148; 13-3493
 and America, 15-3862
 and Great War, 13-3247
 and Poland, 13-3294
 and Serbia, 13-3247
 animals of, 1-161; 21-5573
 arms of, 14-2723
 as it is to-day, 15-3796
 birds of, 6-1504
 birth-rate of, 7-1656
 coal in, 10-2680
 costume of, 12-3438
 cotton in, 19-4885
 during Seven Years' War, 17-4555
 fish of, 10-2601, 2603
 fisheries of, 15-3841
 flowers of, 20-5286
 fossil reptiles of, 14-3663
 furs of, 19-5074
 gems from, 24-6380, 6383
 gold in, 20-5318
 hemp in, 15-4003, 4007-08
 history of, 4-859; 5-1115, 1118; 6-1434; 8-2063, 12-3001
 in Asia, 15-3924
 Jews in, 24-6236, 6238
 making of, 14-3721
 map of, 14-3720; 15-3806
 Napoleon in, 9-2237-38
 peace with Japan, 9-2280
 relations with France, 9-2289-90, 2426
 settlements of free cities in, 10-2554
 soils of, 13-3351
 Spencer's works in, 4-871
 tea in, 23-5971
 war with Sweden, 14-3656
 wheat in, 5-1132
 wool in, 10-2678
 see also Little Russia, Scythia, etc.
 Russian-gossip, a game, 1-262
 Russians, and Bulgaria, 12-3242
 food of, 11-2732
 in battle of Navarino, 12-3240
 in Canada, 1-280; 22-5946
 raids of, 12-3190
 Russian thistle, a weed, 16-4212
 Russo-Japanese War, mention of, 15-3806
 Russo-Turkish War, story of, 12-3244; 14-3728
 Russula, a mushroom, 19-4884
 edible, 19-face 4882
 Rust, causes of, 7-1792
 how to remove, 2-488
 of iron, 12-3227; 16-4674
 see also Iron, Iron-rust, Oxidation
 Rust-disease, of wheat, 11-2949
 Rutgers College, history, 17-4568
 Ruthenians, in Galicia, 11-2895
 Rutledge, Ann, and Lincoln, 2-402
 Rutull, war of, 1-78
 Ryder, Michael A. de, Dutch admiral, 14-3547
 Ryder, Albert F., American painter, 16-4250
 Rye, for bread, 5-1132
 in Sweden, 14-3660
 production of, in United States, 2-2384
 Rye-grass, perennial, 5-1348
 Ryecoe, King, character in "Faerie Queens," 5-700

GENERAL INDEX

- Byasson, Dr. Huxton, Canadian Meteor, 2-793
 2-1274
 Ryks Museum, in Amsterdam, 14-3238
- S
 S. O. E., distress call of wireless, 14-3573
 Sable, ship, 22-5740
 Saavedra, Miguel de Cervantes, see Cervantes
 Saba, dam of valley of, 21-5415
 Saba, island of, 22-6048
 Sabbath, in colonies, 4-264
 name of, 1-22
 Sabbath, a Jewer, 20-3213
 Sabines, and Romans, 20-5275
 Sable, an animal, 1-160; 12-3446; 12-5074
 Sabots, wooden shoes, 2-2423; 12-3262
 Sabra, Princess, and St. George, 4-978
 Saccharin, from coal-tar, 2-216
 sweetness of, 12-4272
 Saccharose, see Glucose, Sucrose
 Sachem, Indian ruler, 1-17
 Sack-race, a game, 2-735
 Sacks, and the farmer, 22-5688
 puzzle of the miller's, 2-2145; 2-2271
 Sacrifices, human, 17-4508
 Sacrum, the sacred bone, 10-2468
 "Sad Fortunes of the Rev. Amos Barton," by
 Elliot, 10-2626
 Sadowa, victory of, 10-2597
 Safety-lamp, carried by Hodgson, 22-5809
 for mines, 2-604, 684; 4-382, 324; 7-1889
 principles of, 10-4209
 Sagadahoc, settlement at, 2-522
 Sages, of the Norsemen, 14-3652
 Sage, as medicine, 4-966
 Sage-brush, a shrub, 14-3625
 state plant, 22-5814
 "Sage of Chelsea," see Carlyle, Thomas
 Sago-palm, in New Guinea, 6-1492
 Saguenay, Indian district, 2-554
 Saguenay River, in Canada, 1-228; 7-1771;
 22-6124
 settlement at mouth of, 2-555
 Sahara Desert, and France, 2-2426
 in Africa, 2-298; 12-3126-27; 12-4297-98, 4308;
 22-6097, 6099, 6101, 6104-05
 Said, and American thief, 12-4989
 Said Pasha, in Egypt, 10-4304
 Sail, of seeds: see also Parachutes, of seeds
 Sailor, drill and work of, 22-6213
 guided by stars or compass, 17-4482
 hitches and splices of, 12-3326
 in "Canterbury Tales," 15-3939
 in Greek Seas, 12-3245
 knots of, 1-251
 puzzle of the laughing, 10-2586; 11-2726
 sailors of our navy, 22-6203, 6214
 search for English sailors, 6-1396-98, 1400
 shark-superstitions of, 10-2478
 shipwrecked, 1-73
 Sailor Kings: see William IV of England
 St. Albans, press at, 14-3612
 see also Verulam
 St. Alexander Nevski, monastery of, 15-3888
 St. Andrews, archbishop of, character in "Old
 Mortality," 7-1776
 St. Andrews, W. B.: see Canada, railways and
 canals
 St. Angelo, Roman fortress of, 12-3082; 12-5100;
 22-5551
 St. Anne, Canadian village, 22-6124
 St. Anne, Mount, in Canada, 22-6124
 St. Anthony, falls of, 22-6071
 St. Augustine, history of, 2-276, 521; 4-959
 pleasure resort, 22-5960, 5965
 St. Bartholomew's Church, in New York,
 10-4221; 12-4275
 St. Bartholomew's Day, massacre of, 4-957;
 6-2072, 2074-75; 21-5409
 St. Basil, cathedral of, 12-3801
 St. Basilienberg, village of, 22-5542
 St. Bernard, kind of dog, 2-506, 508; 21-5505;
 22-6222; 24-6113
 St. Bernard, monastery of, 2-506, 508; 21-5505;
 22-6222
 St. Bernard Pass, across Alps, 2-506; 22-5505
 St. Bile, church of, 2-3260
 St. Catharine, ship, 12-3718
 St. Charles, Green Cartier at, 2-513
 St. Christopher, island of, 22-6043
 St. Clair, Lake, in America, 22-6120
 St. Clair River, in America, 1-325; 22-6120
 St. Croix, island of, American possession, 2-2158;
 2-2250; 22-6046
 St. Croix River, in America, 2-2158
 St. David, Lighthouse, 2-2158
 St. Domingo, in America, 2-2158
 St. Dunstan, in America, 2-2158
 St. Anne de Montserrat, 2-2158
 Sainte-Chapelle, in France, 2-2158
 St. Elias, Mount, in America, 2-2158
 "St. Elmo," in America, 2-2158
 St. Etienne, in America, 2-2158
 St. Eustatius, island of, 2-2158
 St. Evremond, in America, 2-2158
 Two Cities, 12-4221
 St. Francis, death of, painting by Giotto, 12-4221
 4592
 St. Francis Lake, in the St. Lawrence, 2-2158
 St. Francis River, in Canada, 2-2158
 St. Gall, monastery of, 12-3262, 3281
 St. Gallen, Swiss town, 12-3262
 St. Gaudens, Augustus, American sculptor,
 10-4174; 12-4656, 4670-72
 statues of, 12-3262; 12-5015, 5017; 22-6120
 St. Gaul, name of, 21-5552
 St. Gallert, mountain of, 21-5554
 St. George, statue by Donatello, 11-2787; 12-4221
 4179
 St. Germain, and Vidocq, 12-5112
 St. Germain en Laye, treaty of, 2-506
 "St. Gertrude," by Sullivan, 12-4221
 St. Goar, Rhine town, 12-4221
 St. Gothard, in Switzerland, 12-3262, 3281
 22-6847
 St. Gothard Tunnel, under Alps, 12-3262;
 24-6252-60
 St. Helena, Napoleon's exile to, 2-2158; 22-6120
 17-4267-68
 St. Helian, man who saved, 4-1062
 St. Henry, Cathedral of, 12-3262
 St. Isaac, Cathedral of, 12-3262
 St. James, church of, 2-1258
 St. John, New Brunswick, 1-224; 22-6120
 see also Canada, railways and canals
 St. John, Gospel of, 12-3482
 see also Bede
 St. John, Island of, in Red Sea, 24-6221
 St. John, Island of, in Virgin Islands, 2-2158;
 2-2380; 22-6048
 see also Prince Edward Island
 St. John, knights of, 7-1664
 St. John, minister of, 12-4759
 St. John River, in New Brunswick, 2-555;
 21-5546
 St. John's, capital of Newfoundland, 24-6203,
 6206
 St. John's College: see Fordham University
 St. John's River, settlements on, 2-756
 St. John's wort, a plant, 10-4121
 St. John the Divine, cathedral of, in New York,
 12-5012, 5018
 St. Joseph, Hospitalières de, 1-227
 St. Just, and French Revolution, 12-4099
 St. Kitts, island of, 22-6043
 St. Lawrence Gulf, mouth of St. Lawrence,
 2-554
 St. Lawrence River, a description of, 22-6113
 bridges over, 1-33
 claims to valley, 4-895
 in America, 1-10, 33, 223-24, 228; 5-1278;
 7-1671; 22-6120
 name of, 2-554
 settlements on, 2-758; 4-898; 5-1114
 winter sports on, 22-6220
 see also Canada, railways and canals
 St. Lazarus, brothers of, 12-3670
 St. Louis, convention at, 24-6255
 world's exhibition at, 12-3495; 12-4675
 St. Louis, Lake, in St. Lawrence, 22-6120
 St. Luke's Hospital, in New York, 12-4019
 St. Magnus, church of, 2-1258
 St. Malo, in "Follies of the Sea," 12-4221
 St. Mark's Church, in Venice, 2-206-08;
 2-1167-10; 1172; 12-2553; 12-3080; 12-5041
 St. Mark's, name of, in Venice, 12-4078
 St. Mark's Church of, 2-1261
 St. Mark's, island of, 22-6043
 St. Mark's, passport, postoffice in London,
 2-1260
 St. Mary, cathedral of, 11-3896
 St. Mary de Snow, church of, 2-1260
 St. Mary River, see Canada, railways and canals
 St. Mary's Bay, in Nova Scotia, 2-2158
 St. Mary's River, course of, 22-6120
 freight boats in, 22-6120
 St. Martin's Corporation, 22-6120
 St. Martin, Mademoiselle, character in
 "Count of Monte Cristo," 17-4422

GENERAL INDEX

- St. Nicholas:** see Santa Claus
St. Nicholas, magazine, 3-2100
St. Nicholas Park, in New York, 19-5014
St. Patrick, Church of, in New York, 19-5016
St. Paul, city in Minnesota, 22-6071, 6144
St. Paul, Cathedral of, bell of, 6-1545
 in London, 3-764; 4-1042; 5-1115, 1250-53;
 10-4174; 17-4568; 19-5047
St. Paul's Church, in New York, 19-5014
Saint Pelagia, prison of, 16-4105
St. Peter, herb of: see Rock-samphire
 oratory of, 15-4032
St. Peter and St. Paul, fortress and cathedral of,
 15-3800
St. Peter, Church of, in Rome, 3-762; 10-2552;
 12-3075, 3079-80; 13-5100, 5102, 5104-06;
 22-5925, 5930
St. Peter, Church of, in Westminster: see West-
 minster Abbey
St. Peter, Lake, in St. Lawrence, 22-6124
St. Petersburg, former name of Petrograd,
 14-3726
St. Peter's Canal, in Cape Breton, 3-2273
St. Pierre, island of, in America, 4-900; 9-2426
St. Quentin, battle of, 22-5860
St. Roch, church of, 2-2286
 "St. Roch's Well," story of, 3-1497
St. Ruth, and Ireland, 21-5556
St. Ruth, ruins of, in "Antiquary," 7-1669
Saints, stories of, 4-1023
 see also Patron-saint
St. Sophia, mosque of, in Constantinople,
 12-3187-88, 3192; 14-3722
St. Stephen, Cathedral of, in Vienna, 11-2899;
 12-3194; 21-5654
St. Swithin, Cathedral of, in Norway, 14-3662
St. Thomas, Church of, in New York, 19-5016
St. Thomas, Island of, history of, 3-2146, 2157-58;
 3-2380; 23-6048
St. Valentine's Day, 6-1496
St. Vincent, island of, 23-6043
St. Vincent, naval battle of, 17-4364
Saker, a falcon, 7-1900
Sakkara, pyramids of, 23-6180
Saland-burnet, a plant, 17-4474, 4476
Saladin, Sultan, and Egypt and Syria, 6-1553;
 3-2019; 15-3860; 16-4302
 in "The Talisman," 6-1496
Salamanca, battle of, 17-4368
Salamander, an amphibian, 5-1215, 1220
 imaginary creature, 1-218
Salamis, naval battle of, 5-1322; 20-5152, 5199,
 5208
Salem, town in Massachusetts, 2-526; 6-1480
Salem House School, in London, 11-2861
Salerno, Italy, medical school at, 18-4630
Salisbury, Earl of, character in "King John,"
 21-5687
Salisbury, in North Carolina, 22-5958
Salisbury Cathedral, picture by Constable,
 17-4597
Salisbury Crags, in Scotland, 9-2322
Salisbury Plain, in England, 19-5039
Saliva, and food, 22-5904
 in digestion, 11-3949
 in mouth, 6-1464
 use of, 5-2171; 9-2362, 2365-66
Sallow, a willow, 12-3269
"Sally in our Alley," song, 14-3769, 3771
Salmon, Captain, of artillery, 4-1063
Salmon, fight with sea-eagle, 7-1893
Salmon, fisheries of, 10-2678; 15-3843, 3850, 3953,
 3954, 3956, 4060
 habits of, 10-3698-3700
 in British Columbia, 1-229, 233
Salmon, Catch the, a game, 5-1086
Salmon-trout, a fish, 10-3704-05
Salomon, Swedish artist, his picture of
 Gustavus Vasa, 14-3652
Salonica, peninsula of, 19-3186
Salpêtrière, hospital for the insane, 19-4624
Salt, and wild animals, 24-6250
 color of burning, 11-2739
 crystals of, 4-2330
 customs concerned with, 1-202
 dampness of, 14-3773
 for China, 17-4542
 for mountains, 19-4704-06
 for preserving furs, 11-3338
 in Brazil, 20-3271
 in Canada, 22-6094
 in Dead Sea, 22-5315
 in Romania, 12-3246
 in tears, 3-316
 in the body, 6-1463
 made from wells, 1-341
 makes us thirsty, 5-1289
 melts snow, 15-3310
 necessary food, 3-2364; 11-2730; 12-3273
 normal salt solution, 3-616
 nourishes heart, 6-1560
 of the earth, 1-237
 of the sea, 3-428; 5-1288; 12-3147; 21-5418
 production of, 3-2152; 10-3682
 source of, 15-4017
 tallow dip and the black, 4-1065
 the sweetest thing, 19-6120
 what it is, 5-1315, 1316
 see also Bread, and salt
Salta, battle of, 20-5361
Salt-blocks, salt-making establishments, 1-238
Saltcellar, of Cellini, 22-5855
Salterno, Rosa, character in "Westward Ho!"
 14-3714
Salt Lake City, history of, 7-1846
Salt-Lakes, in Australia, 6-1374
Salt Lake Valley, irrigation in, 21-5416
Salt-mine, in Northwich, 15-4017
Saltpetre, from Mammoth Cave, 5-1305
 in gunpowder, 3-2244
Salt River, dam across, 11-3710
Salts, chemical, 5-1315; 6-1462, 1532, 1533;
 7-1813; 11-3780
 food of plants, 10-4111
 in ashes, 10-2838
 in fish-muscles, 17-4875
 in petrified wood, 20-5292
 in rain, 13-3514
 in water, 14-3685
Saltus, character in "Captains Courageous,"
 20-5375
Saltworks, plants, 20-5211, 5216-17
Salvador, history of, 17-4406
Salvation, wall of, in "Pilgrim's Progress,"
 5-1127
Salvation Tree, character in "Westward Ho!"
 14-3716
Salves, from crude oil, 16-4169
Salzburg, Austrian city, 11-2901
Salzburg, Cathedral of, in Austria, 11-2901
Samarra, history of, 19-4966
 Jewish town, 24-6320
Samarra, Asiatic city, 19-3924, 3927, 3931
Samaritan, and Rome, 3-2020; 20-5274
Samoa, islands of the Pacific, 3-2156; 11-2771
Samoyedes, dogs of, 24-6322
Samphire, an herb, 16-4136; 20-5212
 see also Rock-samphire
Samplir, making a, 21-5648
Sampson, Commodore William T., and Santiago,
 8-2154
Sampson, Parson, character in "The Virgin-
 ians," 13-3422
Sampson Hall, at Annapolis, 18-4743
Samsen, Biblical character, 24-6330
"Samsen Agonistes," by Milton, 22-5675, 5680
Samuel, Hebrew prophet, 24-6328, 6330
San Antonio, city in Texas, 22-5982
Sancho Panza, character in "Don Quixote,"
 4-967-72
Sanctuary, meaning of, 19-4664
Sand, behavior of, 3-607
 building castles of, 15-4039, 4041
 cannot burn, 4-918
 deserts and hills of, 16-4113
 for covering, 15-4045
 for glass, 5-1264
 grains magnified, 9-2336
 how made, 3-429
 no rope of, 5-1192
 of the seashore, 5-1420; 20-5396
 origin of, 22-5887
 Yang-su wrote in, 21-5478
Sandal, for foot protection, 19-3106
 of children, 12-4844
 of Mercury, 4-1051
Sandalwood, in New Guinea, 6-1492
Sand-bags, weights for balloon, 3-420
Sand-box-tree, seeds of, 13-3812
Sand-buildings, 6-1425, 1428
Sand-bees, scavengers, 10-2615
Sand-hoppers, are scavengers, 10-2617
San Diego, history of, 7-1846
San Diego Mission, olives in, 3-650
Sandman, the, 4-324
Sand-martins, birds, 4-3215-16; 22-5744
Sand-molds: see Molds
San Domingo, discovered, 1-64
 frogs of, 12-3458
Sandor, Count, driving of, 22-5773

GENERAL INDEX

- Sandwich-Albion, collection of pictures, 22-5772
 Sand-otter, an animal, 12-4080
 Sandpaper-plant, of sea-beaches, 22-5215
 Sandpiper, bird, 2-584, 2-1978; 2-2228, 2241
 Sand-screw, an animal, 10-3815
 Sand-star, marine animal, 2-2412
 Sandstone, kind of rock, 2-229, 10-2480, 12-3047, 20-5340, 5396, 22-5587
 Sandstorm, in Australia, 22-5101
 of deserts, 12-3557
 Sand-viper, poisonous serpent, 2-1386
 Sandwiches, making, 12-3222
 Sandwich Islands, birds of, 7-1640
 see also Hawaii, islands of, Kanakas
 Sandy Hook guns at, 22-6142
 San Sagra, a battery and a convent, 2-1952
 San Francisco, and Drake, 2-231
 City Hall of, 22-5720
 earthquake of, 12-3252, 2495
 exposition at, 1-24, 12-3495
 fire in, 22-5757
 Golden Gate Park of, 10-2682
 history of, 7-1846, 1848
 mint in, 14-3645
 San Francisco Bay, entrance of, 2-1120
 Sangster, Charles, poems, see Poetry Index
 Sangster, Margaret, poems see Poetry Index
 Sankle, a plant, 12-4015
 San Juan, in Porto Rico, 2-272
 Sankey, Ira David, evangelist, 2-2016-17
 San Marco, library of, 2-1170
 monastery of, 12-4022, 4037
 San Martin (Jose de), Argentine leader, 12-4608, 20-5361, 5364, 5367
 liberator, 17-4514
 San Martino, story of, 12-4992
 Sanmichele, Michele, Venetian architect, 2-1170
 San Mocco, school of, Tintoretto's ceiling for, 2-1179
 San Salvador, discovered by Columbus, 1-58
 17-4464 22-6041
 Sansovino, Jacopo, Venetian architect, 2-1170
 Sans Souci, Palace of, 17-4552
 Sant, James, painting of Dick Whittington, 2-297
 Santa Anna, Antonio L. de, Mexican president, 7-1844, 17-4401, 4404
 Santa Barbara, Dana and, 24-6226
 history of 7-1846, 1848
 Santa Claus, and Christmas, 17-4527
 costume for, 20-5346
 true story of, 2-2184
 see also Nicholas, St.
 "Santa Claus's Partner," by Page, 2-1621
 Santa Cruz, Andres, Peruvian dictator, 12-4608
 Santa Cruz, battle of, 4-1041
 Santa Cruz, an island, 2-1493
 Santa Fe, history of, 2-276, 521, 7-1844
 Santa Maria, ship, 1-62
 Santa Maria Novella, church of, 11-2792
 Santangel, Spanish statesman, 10-2445
 Santa Rosa, Burbank's farms at, 14-3562
 Santiago, battle of, 2-2154
 Santiago, capital of Chile, 12-4602, 20-5366
 Santo Domingo, capital of Dominican Republic
 22-6041, 6044
 cathedral of, 12-3245
 Santos-Dumont, Alberto, air-craft of, 1-173, 176
 Seine River, in France, 2-2412, 2422
 Sapor, Sassanian king, 20-5155
 Sapphire, precious stone, 12-3220, 24-6377
 6382-83
 "Sappho," by Grillparzer, 12-3295
 Sappho, character in "Egyptian Princess," 22-5961
 Sapsucker, a woodpecker, 12-2155
 Sarcophagi, and Bruce's Heart, 12-3132
 and crusades, 2-1548
 and Palestine, 2-1549
 in Sicily, 12-3078
 invaded France, 2-2068
 wars of the, 12-3152
 see also Moors
 Saragossa, siege of, 2-1952
 Spanish city, 12-3222
 see also Maid of Saragossa
 Sarkis, Armenian doll, 12-3204 2424, 2427
 Sarkis, or Sarkis, wife of Abraham, 24-6229
 Sarraf, Lazar, sanitarium at, 22-5949
 Saragosa, battle of, 2-2067
 Sardine, fish, 10-2405-06, 12-3245, 3264
 Sardinia, island of, 12-3074, 3082, 20-5276
 Sardis, kingdom of, 12-3073, 3082, 2054, 2086
 Sardis, king of, see Croesus
 Sardonyx, precious stone, 24-6378, 6381
 Sarsaparilla, a medicine, 2-2227
 Sargent, John H., American painter, 2-1577
 portraits of, 12-1577
 Sargon, king of Assyria, 12-3227
 Sarracenia, insect-eating plant, 2-2227
 Sarsaparilla, the word, 2-2227
 Sarsfield, Thomas, Irish general, 2-2227
 Sars, costumes of, 2-2227
 Saskatchewan, a province in Canada, 2-2227
 population of, 2-2227
 productions of, 2-2227
 province of Canada, 1-220, 2-2227, 2-2227
 12-3722, 21-5210
 trees of, 12-3722
 woman suffrage in, 2-1454
 see also Canada, railways and
 Saskatchewan River, in Canada, 2-2227
 Saskatchewan, University of, in Canada, 2-2227
 21-5402
 Saskatchewan Valley, history of, 12-3722
 Saskatoon, Canadian town, 2-1577, 21-5402
 Saskatoon River, in Canada, 1-220
 Sassafras, a tree, 21-5434-35
 Satan, and St. Christopher, 2-1024
 in "Paradise Lost," 22-5278
 Satellite, what it is, 2-2205
 Satires, of Marvell, 12-4599
 Satisfaction, never reached, 20-5178
 Saturday, name of, 1-95
 Saturn, Roman god, 1-95
 Saturn, moons of, 1-140, 142; 2-2222; 12-3277
 planet, 2-1922, 2086, 2-2224, 2225, 2222-24;
 10-2245
 Satyrus, character in "Faerie Queene," 2-202
 Satyrus, imaginary beings, 1-217
 Sauts, leaf-cutting ants, 11-2922
 Saul, king of Israel, and David, 24-2224, 2225
 and Rishph, 22-5215
 Sault St. Louis, 2-555
 Sault Ste. Marie, rapids of, 22-6122
 Sault Ste. Marie Canal, for ships, 2-222; 2-2272;
 21-5611, 22-6122
 Saunier, Madeleine, hermitess of, 2-1064
 Savages, beliefs of, 1-315
 Savannah, ship, 12-2491-92
 Savannah, capture of, 2-2052
 city in Georgia, 22-2952
 fire in, 22-5757
 founded, 2-522
 Savannah-sparrow, a bird, 12-3460
 Save River, in Europe, 12-3242; 21-5652
 Saviour, blood of, at Westminster, 12-4682
 Savonarola, Girolamo, Florentine monk,
 11-2792, 2797, 12-4022-29, 4036
 Savoy, Duke of, 1-127
 Savoy, given to France, 2-2290
 province of, 12-3022, 3026
 Saw, how to use, 2-222
 Sawdust, for polishing, 12-5002
 Saw-fish, attacks whales, 4-1071-72
 in fresh water, 10-3692
 Saw-mill, in New Zealand, 2-1489
 Saw-whet, an owl, 12-3152
 Sawyer, Bob, character in "Pickwick Papers,"
 10-2459
 Sawyer, Tom, character of Mark Twain's,
 22-6072
 Saxifrage, a plant, 2-2022, 11-2879, 12-4126,
 12-4759
 Saxifrage-family, 12-4126, 12-4752
 "Saxon Queens," see Angela
 Saxons, and St. Augustine, 12-4790, 4792
 in England, 2-465, 4-256, 2-1252; 12-2549-50,
 17-4370
 in "Ivanhoe," 7-1662
 religion of, 12-3652
 story of Beowulf, 12-2602
 went to Britain, 10-2550
 Saxony, gems from, 24-6292
 Saxony, king of, allied with Maria Theresa,
 17-4544
 and Napoleon, 2-2229
 Saxony, and Gustavus Adolphus, 10-2552
 land of Saxons, 10-2552
 Saxony, Saxony at, 2-522
 Saxony, a plant, 12-4126, 17-4472
 Saxony, G. Saxons, Roman hero, 12-2694
 Saxons, clothing and, 12-2994
 Saxons, 12-3222
 Saxs, centigrade, 12-3272, 12-3227; 12-4022
 Fahrenheit, 12-3272, 12-3220
 of temperature, 2-1227
 Scale, the musical, 2-1227, 12-4024
 Scale-insects, injurious, 2-2222
 Scales, a constellation, 24-2241, 2242

GENERAL INDEX

- Scales, of armadillo, 4-1018
 of butterfly, 12-3011-12
 of fish, 7-1740; 10-2708
 of grasses, 5-1840
 of pangolin, 4-1017-18
 of seeds, 12-4205
 Scallops, as food, 10-2618
 destroyed by starfish, 2-2412
 Scallops, buttonholed, 2-621
 Sculp, bleeding of, 12-4228
 Indian use of, 1-18
 removed by Indians, 10-2576
 rewards for Indian, 4-894
 Scanderbeg: see Castriot, Georges
 Scandinavia, history of, 14-3651
 Scandinavians, in Canada, 21-5610
 Seane, a province, 14-3652
 Seantlebury, Elizabeth, poems: see Poetry Index
 Seape, of flower, 12-4658
 Scapula, the shoulder-blade, 12-4200
 Sear, cause of, 12-2725
 character of, 2-1952
 Sear, meaning of, 2-470
 Searab, Egyptian beetle, 12-3303, 3306
 Seare-crow, costume for, 20-5346
 "Searlet Letter," authorship of, 6-1481
 Sear-tissue, in the eye, 17-4435
 Seap-duck, egg of, 7-face 1756
 Searwings, birds as, 7-1632-42, 1896; 2-2342
 microbes said to be, 4-820
 see also Blood, calls of, Insects
 Scenario, of moving picture play, 20-5139
 Scene, Alpine table-scene, 12-4704-06
 for model stage, 12-4823
 Scenes, in history, 12-2523
 "Scenes of Clerical Life," by Eliot, 10-2626
 Scent, known by dog, 5-1163
 made in France, 2-2422
 that climbed out of a bottle, 12-2538
 Schadour, for drawing water, 22-6182, 6189
 Schaffhausen, falls of, 12-2982
 in Switzerland, 12-2984; 14-2519
 Schamyl, Caucasian patriot, 12-3001
 Schelde, estuary in Europe, 14-3529
 Schenckeburger, Max, author of the "Watch
 on the Rhine," 14-3772
 Schenectady, burned, 4-894
 town in New York, 12-4766
 Schiller, Johann G. F., German writer, 12-3393,
 3395, 3397; 20-5307, 5313
 Schiltorn, mountain in Switzerland, 22-5845
 Schism, the Great, 11-2903
 Schleswig, Duchy of, 14-2656, 2658
 province of, 10-2597
 Schleswig-Holstein, history of, 11-2905
 Schley, Commodore, and Santiago, 2-2154
 Schliemann, Dr. (Heinrich), discoveries of,
 12-5640
 Schlösserbrücke, a Berlin bridge, 11-2762
 Schlössenburg, named by Peter the Great,
 14-3726
 Schmidt, poor people, 5-1151
 Schaeffer (Peter), and Gutenberg, 14-3609
 Schofield, General (John McA.), during Civil
 War, 2-2053
 Scholarship, for sculptors, 12-4668
 School-city, organization of, 24-6388
 Schoolgirl, and a bull, 12-4663
 School-lessons, Book of: see Tables of Contents
 Schoolmaster, traitor, 2-436
 Schoolmistress, a game, 10-2591
 School of Athens, picture, by Raphael, 5-1320,
 1327
 School-paper, starting a, 12-4819
 School-republic, organization of, 24-6387
 School-room, French names for, 12-4930
 ventilation of, 7-1805
 Schols, and Horace Mann, 20-5240
 and schoolmen in Canada, 21-5461
 for Newgate prisoners, 2-1329
 great-grandmother's, 1-207
 in the colonies, 4-360
 medical, 12-4370
 of New York, 12-3220
 of Paris, 12-3223
 singing, 12-3048
 stories told in old, 21-5567
 woman superintendent of, 12-3133
 see also Canada, Education, etc.
 School-state, organization of, 24-6386
 Schoner, a ship, 12-3260
 Schopenhauer, Arthur, and Hebbel, 20-4698
 Schreyer, Adolf, picture of Arabs and horses,
 2-256
 "Schroffenstein Family," by Kleist, 12-3224
 Schubert, Franz, musician, 12-3225, 3226
 Schuckburg, Dr., and Yankee Doctor, 12-3253
 Schumann, Robert, musician, 12-3255, 3256
 Schuyler, General, wife, daughter married
 Hamilton, 12-3256
 during the Revolution, 4-1000-01, 1004
 Schuykill Valley, and frontier, 24-6350
 Schwartz, in story, 2-1437, 1527
 Schwartz (Berthold), German monk, and gun-
 powder, 2-1164
 Schwatka, Lieut. Frederick, arctic explorer,
 21-5460
 Schwyz, canton of, 12-2986, 2988
 Science, famous men of, 4-865
 modern heroes of, 12-3233
 the oldest, 2-1959
 "Science and Health," by Eddy, 12-3122
 Scientists, who have saved lives, 24-6363
 Seillas, flowers, 12-4658
 in water, 10-2582
 Seion: see Clon
 Seipio, (Publius) Cornelius, Roman general,
 2-428; 20-5276
 Seisner-Hills, birds, 7-1644
 Seisner, boy conjurer's magic, 4-849
 manufacture of, 12-4802, 4803-09
 Seone, Bruce crowned at, 12-2135
 Seocops, for ore, 22-5692
 see also Steam-shovel
 Seopas, Greek sculptor, 12-4172
 Seorah, how to remove marks, 2-488
 Seore, in tennis, 17-4279
 reading a, 12-4692
 Seorpion, a constellation, 10-2641, 2643
 Seorpion, and Orion, 12-3373
 poisonous animal, 12-3361, 3364
 the water: see Water-scorpion
 Seotah, in Canada, 5-1278; 14-3752; 16-4079;
 12-4834
 in New Zealand, 6-1486
 Seotah-Kish, in America, 7-1832
 Seotia, ship in "Twenty Thousand Leagues,"
 12-5049
 Scotland, king of, 2-592
 Scotland, animals of, 2-510, 513, 2-808; see also
 Great Britain, animals of
 as Peg Bull, 2-2552
 birds of, 2-1559; see also Birds, flesh-eating
 covenanted in, 21-5625
 crown of, 12-2135
 fish of, 10-2705
 flag of, 2-2854
 food of, 10-2602
 grouse-shooting in, 2-1562
 history of, 1-126, 128; 2-470; 3-592, 594, 770,
 774; 4-856, 860, 1048
 kings and queens of, 12-3133
 lighthouses on, 2-750
 mussels in, 12-3852
 national plants of, 17-4480; 22-5816
 Northmen in, 14-3652
 parliament of, 4-1035
 plants of, 12-4655
 rain in, 12-3148
 reformation in, 12-5093
 Scots, and Charles I, 7-1853
 Celtic people, 17-4370
 kingdom of the, 12-3133
 see also Maid of Norway, Mary Queen of
 Scots, Picts and Scots
 Scotsman, and his oats, 11-2950
 Scott, Duncan Campbell, poems: see Poetry Index
 Scott, Frederick George, poems: see Poetry Index
 Scott, Sir Gilbert, perpetrated Albert Memorial,
 12-5040
 Scott, Lady John, and "Anne Laurie," 14-3769
 Scott, Mr., character in "Abbé Constantin,"
 12-4752
 Scott, Mrs., character in "Abbé Constantin,"
 12-4752
 Scott, Captain (Robert F.), Antarctic explorer,
 2-2351; 21-5457, 5459, 5464
 Scott, W. Bell, his picture of Eyrid, 12-4794
 Scott, Sir Walter, comments of, 12-2621; 12-3121
 English writer, 2-462; 2-1491, 1501; 2-2021, 2223
 monument to, 12-5047
 poems: see Poetry Index
 writings of, 2-1495; 7-1822, 1776
 Scott, General Winfield, college of, 17-4568
 during War of 1812, 2-1558, 2-1559
 in Mexican War, 7-1822, 1845
 nomination of, 12-5047
 "Scottish Chiefs," by Porter, 12-2622

GENERAL INDEX

- "Source of God," see Attila
 "Scouting for Boys," by Seton, 6-1651
 Scout Law, of Boy Scouts, 22-4128
 Scouts, and Indians, 1-31
 of bees, 11-3350
 see also Boy Scouts
 Scout Salute, of Boy Scouts, 22-6140
 Scout-ships, naval, 22-6204
 Scramblapop, a gnome, 8-2181; 14-3708; 15-3870
 Scray-box, making a, 8-3852-60
 Screech-owl, a bird, 8-2142, 12-3154
 Screen, in moving pictures, 20-5136
 used in making pictures, 4-952
 Screw, action of ship's, 1-30
 Screw-driver, use of, 8-354
 Screws, use of, 8-1860
 Scrowworm, a gnome, 8-2181, 14-3708, 15-3874
 Scribe, tools of Egyptian, 12-4844
 Scrimmage: see Football
 Scripture, anagrams of, 19-5037
 Scrooby, congregation in, 8-526
 Scrooge, Ebenezer, character in "Christmas Carol," 8-2197
 Scrub, character in "Cobblers and the Cuckoo," 8-2311, 2398
 Scudamore, Sir, character in "Faerie Queene," 3-701
 Scully, and the powder magazine 12-4799
 Sculptor, the unknown, 8-1958
 Sculpture, form of, 12-4171
 in America, 12-4665
 in Venice, 8-1172
 little talk on, 12-4171
 Scum, floats, 12-3150
 Scuppers, of a ship, 12-4620
 Scurvy, killed colonists, 2-334 55
 Scurvy-grass, a plant, 12-4762
 Scutari, English cemetery in, 12-3244
 hospital at, 14-3739
 Turkish city, 12-3856
 Scutari, Lake, in Europe, 12-3244
 Scutcher: see Lapper
 Scylla, story of, 1-76
 Scylla, a rock, 12-4811
 Scythe, for harvesting, 12-4152
 Seythia, Andrew, apostle in, 8-2351
 history of, 20-5148 5186
 Seythians, race of barbarians, 14-3721
 Sea, always moving, 4-1081, 6-1422
 amount of water in, 10-2652
 and climate, 12-4813
 animals of, 1-55 3-672 8-2404-05, 10-2611, 2616, 2651
 blue light of, 14-3684
 bottom of, 12-3506, 14-3773
 calmed by oil, 12-5022
 changing contour of earth, 2-425
 color of, 7-1882
 conqueror of, 10-2487
 currents in, 4-1082
 depth of, 20-5175
 ever changing, 2-431
 falling out of, 22-5873
 fishes in, 8-1230, 10-2601, 2699, 17-4375
 food from, 10-2678
 freezing of, 17-4584
 gods of see Nereus
 gold in the, 10-2651; 16-4111, 20-5317
 heat of, 1-185
 humble life in, 12-4876
 lashed by Xerxes, 20-5153
 life came out of, 2-375, 3-670
 mastery of the, 4-1086
 mirage on, 22-6076
 never gets larger, 5-1228
 oxygen in, 2-375
 pressure of water, 12-3506
 radium in the, 10-2651
 roaring of, 17-4533
 salt of the, 8-1388, 21-5412
 sun does not draw up salt from, 12-3147
 tides of, 1-38
 water does not soak through bottom, 12-3506
 woman's ride in the, 12-4084
 Sea-anemones, marine animals, 8-1421
 2-face, 2464, 2467-68, 2411, 12-3668, 17-4492
 partnerships of, 12-3514
 Sea-bass, for aquarium, 17-4433
 Sea-beans: see Beals
 Sea-birds: see Birds
 Sea-bishop, imaginary creature, 1-217, 220, 221
 Sea-blossom, a plant, 20-5212
 Sea-brown tubercularis Hospital, a home, 12-3329
 Sea-buckthorn, a plant, 20-5211
 Sea-cucumber, a plant, 20-5211
 Sea-cucumber, a marine animal, 8-1421
 2-face, 2464, 2467-68, 2411, 12-3668, 17-4492
 Sea-devil: see Devil
 Sea-eagle, a bird, 12-3154
 Sea-egg: see Egg
 Sea-elf, a sea spirit, 4-1082
 Sea-unicorn, a sea spirit, 4-1082
 Sea-goat, a constellation, 12-3142
 Sea-grave, Albert, character in "Masthead Ready," 8-2025
 Sea-grave, Caroline, character in "Masthead Ready," 8-2025
 Sea-grave, Mr., character in "Masthead Ready," 8-2025
 Sea-grave, Mrs., character in "Masthead Ready," 8-2025
 Sea-grave, Thomas, character in "Masthead Ready," 8-2025
 Sea-grave, William, character in "Masthead Ready," 8-2025
 Sea-gull, a bird, 1-177, 4-873
 egg of, 7-face 1760
 Sea-hawks, ships, 4-862, 1043
 Sea-hedgehog: see Sea-urchin
 Sea-holly, a plant, 12-4136, 20-5217
 Sea-horse, a fish, 10-2609, 17-4483
 Sea-horse, imaginary animal, 1-215
 Sea, King of the, in story, 2-734-37
 Seal, cylinder, 20-5148
 roller, 12-4958
 the magic, 21-5523
 Sea-lavender, flower, 8-1698; 8-1512; 20-5212, 5216
 Sea-lettuce, a sea-weed, 12-4933
 Sealing-wax, and heat, 22-5891
 behavior of, 3-607
 electrical properties of, 8-2122
 Sea-lion, a seal, 1-318, 4-1046; 12-2783; 20-5720
 Seal Rocks, in San Francisco Bay, 20-5720
 Seals, fur of, 12-4074
 group of stuffed, 20-5323
 hunting the, 12-4060, 24-6294
 leather from skins, 12-2334
 marine animal, 2-377, 4-1066-67, 1975, 10-2464, 2703, 21-5510, 5564
 see also Fur-seal
 Sea-lyme, a grass, 5-1244
 Seamen, American, 12-3006
 Sea-milkwort, a plant, 20-5216-17
 Sea-monks, imaginary creatures, 1-220
 Sea-monster, and Andromeda, 12-3374
 Seams, how to make, 2-469
 Sea-nettles, marine animals, 8-2411, 2413
 see also Jelly-fish
 Sea of Many Islands: see Archipelago, Grecian
 Sea, Old Man of the, in story, 2-792
 Sea-otter, fur of, 12-4060; 12-4837; 12-5074
 Sea-parrot: see Puffin
 Sea-pen, formed of animals, 8-2413
 Sea-pink, a plant, 20-5216
 see also Thrift
 Sea-ports, and Congress, 6-1435
 Sea-pudding: see Sea-cucumber
 Sea-purses, egg-pouches of sharks, 10-2486
 Sea, Queen of the, in story, 4-1052
 Searchlight, on battleships, 22-6209, 6211
 Sea-reed: see Beach-grass
 Sea-rock, for aquarium, 17-4493
 Sea-rovers, picture, 4-464
 Sea-serpent, constellation, 10-2439, 2445
 Sea-serpent, fables of, 1-218, 221, 10-2454
 Sea-shell, noise in, 4-311
 picture by Moore, 12-3101
 Sea-shore, walk by the, 6-1418
 Sea-side, flowers of the, 20-5211
 Sea-slugs, marine animals, 8-1407, 2412-13
 see also Sea-cucumber
 Sea-snake, marine serpent, 8-1407-84
 Sea-songs, the Songs, writers of famous, "Sea-songs" of Haydn, 12-3237
 "Sea-songs" of Thomas, 12-3766
 "Sea-songs" the painting of, 7-1652
 Sea-songs, wonder of the, 8-1154
 Sea-sounding, 20-5175
 Sea-swallows: see Terns
 Sent, made with hands, 12-3044
 of Egyptians, 12-4661
 problem concerning, 8-241
 see also Garden-seal
 Sea-trout: see Salmon-trout

GENERAL INDEX

- "*Seas of the Mighty*," by Parker, 18-4327
 Seattle, city in Washington, 10-2687; 22-5717
 university at, 17-4574
 Sea-unicorn: see Narwhal
 Sea-urchin, a cactus, 18-4012
 Sea-urchin, a marine animal, 6-1426-27;
 8-face 2404, 2412; 14-2665
 Sea-water, for aquarium, 17-4492
 specific gravity of, 18-3828-29
 Seaweed, affected by weather, 12-2993; 15-3968;
 20-5174
 collection of, 18-4920
 contents of knobs, 19-5020
 early in existence, 1-187
 elements obtained from, 8-1814
 for aquarium, 17-4492
 for fuel, 18-4045
 fossil, 11-2915
 growth of, 20-5219
 of the shore, 6-1421, 1423
 yields potash, 18-4144
 Sea-worms, attack coral, 9-2408
 Sebastian, Shakespearian character, 2-330, 445
 Sebastopol, experimental farm at, 14-3582
 Sebastopol (Russia), siege of, 8-1118; 14-3728-29,
 3768
 Sebert, King, of East Saxons, 18-4681
 Second, unit of time, 14-3672
 Secretary-bird, a vulture, 7-1895, 1898
 Sections, for honeycomb, 11-2853, 2855
 of honeycomb, 11-2855, 2858
 Sedan, defeat of, 9-2290; 10-2595-98
 Sedan-chair, man-carried vehicle, 22-6052
 Queen Charlotte's, 22-6173
 Sedges, marsh-plants, 18-4954; 22-5746
 Sedge-warbler, a bird, 8-2107, 2111
 Sedition Laws: see Alien and Sedition Laws
 Sedum, a plant, 8-2039; 20-5229, 5235
 Seed-leaves, use of, 18-3814
 Seeds, and colors, 17-4486
 breath of, 4-914
 carried by birds, 8-2214
 distribution of, 8-1240; 18-3812-13, 18-4185,
 4205; 17-4349; 20-5340; 22-5928
 dried, 7-1793
 fruit-stones are, 8-2083
 growth of, 5-1132; 7-1793
 of orchids, 11-2885
 or trees, priority of, 22-5832
 plants contained in, 8-2084; 18-3812, 3814
 power of, 8-1165
 sowing, 1-249; 8-1098; 10-2581; 16-4147-48
 winged, 18-3890
 see also Plants
 Seed-vessels, of plants, 1-249; 3-623, 5-1249
 Seed, of the church, 18-4789
 See-saw, teaches laws of motion, 14-3675
 Sefton, Mount, in New Zealand, 8-1487
 Seggars, for china-firing, 17-4541, 4543, 4547
 Segi-lily, state flower, 22-5816
 Selkirk-powder, as charge for cannon, 18-3902
 Selma, of France, 3-558; 18-4099
 Selma, of Canada, 20-5301
 Selma, of Canada, 2-756
 Selma, a fish-net, 18-3842
 Seine River, in France, 9-2418
 see also Paris
 Seljann, Roman captain, 2-536
 Selah, King of the Sea, 3-796
 Seleucids, Persian dynasty, 20-5154
 Seleucus, Greek king of Persia, 20-5154
 Self-binder, a harvesting machine, 18-4149
 Self-consciousness, existence of, 18-4277
 Self-control, mark of civilized man, 21-5441
 Seljuk-Turks, conquests of, 12-3190; 15-3880
 Selkirk, Alexander, rescued, 2-864
 Selkirk Range, in Canada, 7-1771; 22-5778
 Sell, Grandma, dog of, 4-862
 Selwyn, Maria, story of, 8-2064
 Selwyn, Squire, and Maria Selwyn, 8-2064
 Semaphore-signals, 2-212; 12-3782-84
 Semibreve: see Music
 Semboles, need of, 22-5743
 Seminoles, Indian tribe, 1-21
 Seminole War, in Florida, 18-3491
 Semiramis, a statue, 18-4288
 Sempronius, Gnaeus Pompeius, commander of Ala-
 bama, 8-3049
 Semolina, wheat flour, 11-3743
 Semper, battle of, 1-132; 12-3882
 Senegal: see Canada, Senate, France, Senate, etc
 Senate, Chambers, in National Capitol, 7-1636
 Seneca, election of, in U. S., 8-1434, 1438
 Seneca, Roman statesman, 2-438
 Seneca Chief, a canal packet, 18-4767
 Senecas, Indian tribe, 1-21
 Sennacherib, king of Assyria, 19-4965-67
 Sensations, and thought, 18-5080
 associated, 18-4875
 importance of, 18-4748
 "Sense and Sensibility," by Austen, 10-2623
 Senses, contact, 18-3907
 education of, 18-3913
 skin organ of, 8-1984
 see also Brain
 Sentences, that need stops, 22-5743
 "Sentimental Journey," by Sterne, 7-1751
 Sentinal, Lombard, 18-4992
 Pompeian, 22-6320
 see also Jack, house of
 Sentry-box, of folded paper, 12-4825
 Sepals, of flower, 18-2816; 18-4184, 4205
 Separatists, from English Church, 2-524
 Separator, for milk, 17-4372
 Sepia, cuttle-fish ink, 10-2484-85
 "Sepoy General": see Wellington
 Sepoy Rebellions: see Indian Mutiny
 Sepoys, soldiers of India, 7-1718
 September, birthstone for, 24-6378
 massacres of, 18-4108, 4108
 name of, 17-4535, 4537
 Sepulchre, Holy, in Palestine, 20-5384
 see also Crusades
 Sequoia, cross-section of, 20-5328
 Serapis, ship, 12-3004
 Serapis, temple of, 12-3031
 Serbia, costumes of, 12-3245
 fruit in, 13-3242
 history of, 12-3186, 3190, 3192; 13-3242, 3247
 21-5658
 Serfdom, in Europe, 10-2560-61, 11-2903
 Serfs, rebellion of, 11-2900
 Russian peasants, 14-3724, 3729, 15-3797
 see also Peasants, Russian
 Sericema, a bird, 8-1976-77
 Sericifera, a rubber collector, 22-5795
 Seriphos, king of, 4-1061
 Seripositors: see Spinnerets, of silkworms
 Serpent, a constellation, 10-2641
 Serpent, a game, 19-5132
 Serpent, killed Cleopatra, 22-5791
 see also Snakes
 Serpentine, a rock, 20-5850
 Serra, Father Junipero, Franciscan missionary
 7-1846
 Serriocornia sternicornis, an insect, 12-3194
 Servant, who saved his mistress, 7-1741
 Servants, the prince's, 17-4243
 Servetus (Michael), Spanish physician, 6-1593
 18-4631
 Service, Robert W., poems: see Poetry Index
 Service, in tennis, 17-4378, 4380
 Service, term of, in France, 9-2424
 Service-berry: see Shadbush
 Service-tree, of Europe, 14-3531
 Sesame, magic word, 1-201
 Seton, Ernest Thompson, American author,
 6-1621
 Seton Indians, boys' society, 23-6136
 Setter, a hunting-dog, 2-510; 24-6320
 Setterwort, a plant, 17-4353
 Settlement, Act of, and Ireland, 22-5556
 "Settler," by Connor, 18-4327
 Settlers, on prairies, 22-5945
 Seven, magic number, 22-5895
 Seven Days' Battle, in Civil War, 8-2048
 Seven Hills, city of: see Rome
 Seven Mountains, and the Rhine, 14-3539
 Seven Pines, battle of, 8-2048
 "Seven Seas," by Kipling, 23-6040
 Seven Sisters: see Pleiades
 Seventh of March, speech by Webster, 10-2442
 Seven Wise Men, of Greece, 7-1675
 Seven Years' War, effect on Germany, 12-3894
 history of, 10-2561; 17-4555
 in America, 4-398; see also French and Indian
 War
 Severa, a ship, 21-5600
 Severus, Arch of, 19-5041
 Sevilla, Spanish city, 12-3335, 3347; 17-4514
 Sevilla, Cathedral of, in Spain, 12-3342, 3347
 see also Giralda
 Sevilla, Palace of, in Spain, 12-3342
 Sevres, china made at, 8-2420
 Sewage, disposal of, 4-906
 Seward, William H., American statesman,
 8-3040; 10-2442
 attempted assassination of, 8-3054

GENERAL INDEX

- Sewer, rescue from a, 10-2666
 Sewing, various ways of, 2-459
 see also Embroidery, Needlework, Work-basket, what to do with girl's, etc.
 Sewing-machine, development of, 11-2717; 21-5603
 Sextant, and noontime, 2-3261
 Sextilla, the sixth month, 17-4537
 Sexton, and Vidocq, 10-5113
 Sextus, Roman noble, 2-485, 6-1403
 Seymour, Jane, queen of England, 4-859
 Shackles: see Anchor
 Shackleton, Lieut. Sir Ernest, Antarctic explorer, 17-4482, 21-5457-64
 on Mt. Erebus, 21-face 5454
 Shad, fish, 10-2606, 2704
 fishing for, 15-3842
 transference of, 15-3841, 3849
 Shadblow, a tree, 20-5342
 see also Service-berry
 Shaddock: see Grapefruit
 Shade, moved by gas-jet, 18-4693
 Shades, characters in "Blue Bird," 22-5838
 Shadow of Death, Valley of, 5-1181
 Shadows, and hills, 7-1880
 bigger than ourselves, 12-3146
 biggest, 7-1881
 distorted picture, 21-5519
 dog and the shadow, 3-580
 Earth's shadow, 13-2507
 in "Peter Pan," 11-2887
 length of, 18-4691
 light makes, 13-3510
 measurement by, 2-1943, 2-2208
 of cells, 12-3046
 pictures by, 20-5353
 see also Moon
 Shadow-Theatre, management of, 22-3917
 Shaftesbury, Earl of: see Ashley, Lord
 Shaftesbury, Lord, statue of, 5-1120
 Shafts, in aqueduct, 20-5194
 of coal mines, 4-832, 836
 steel used for, 22-5690
 Shag, a bird, 7-1640
 Shagbark, a hickory tree, 21-5434-35
 Shaggy-man, a mushroom, 12-4884
 Shagreen, skin of shark, 10-2480
 Shah, of Persia, 15-3861-62
 Shahab-ud-Din, emperor of India, 11-2940
 Shaheen, a falcon, 7-1900
 Shah Jehan, Mogul emperor, 6-1636-37, 7-1713, 1716
 Shakespeare, John, father of William, 21-5579
 Shakespeare, William, anagram from, 19-5037, 5133, 21-5452
 and nature, 9-2237
 birthplace in cardboard, 2-382
 comment on woman's voice, 16-4096
 English poet and dramatist, 1-102, 2-537, 4-860, 21-5579
 epitaph of, 21-5582
 poems see Poetry Index
 portrait bust of, 12-4672
 writings of, 2-327-30, 443, 445, 447, 449, 5-581-63, 637, 638, 639, 641, 643, 12-3133, 12-4853, 20-5280
 Shale, oil-bearing rock, 16-4166, 4169
 Shallow, Justice, character of Shakespeare, 21-5580
 Shamsheser, Assyrian ruler, 24-6230
 Shamsheser II, king of Assyria, 19-4964
 Shamash, the sun-god, 18-4963
 Shamrock, and St. Patrick, 21-5652
 embroidering, 6-1517
 Irish national plant, 12-3066, 17-4349, 22-5816
 see also Wood-horrel
 Shanley, Charles Dawson, poems, see Poetry Index
 Shannon, in Ireland, 21-5559
 Shannon, ship, 2-1393, 12-5808
 Shape, character in "Peter Pan," 11-2887
 Shark, a fish, 1-54; 10-2476-77, 2607-08
 mistaken for sea-serpent, 10-2484
 skin for leather, 11-3884
 Shark-meat, mimicry of, 12-3451
 Sharp, Right Rev. James, in "Old Mortality," 7-1776
 Sharpsburg, battle of, 2-2048
 Sharpe, Mount, dead volcano, 1-13
 Shawin, Asiatic trade in, 12-3927-28
 how to crochet, 12-5128
 of Shetland, 22-6127
 woven in India, 6-1633
 Shaw Memorial, by St. Gaudens, 10-4972
 Shaws: see Scissors
 Shearwater, a bird, 7-1640
 Sheath, of nerve, 12-3572
 Sheath-bill, a bird, 7-1640
 Sheave, for electric elevator, 22-6127
 Sheen, Palace of, 12-3889
 Sheep, adventure with in "Don Quixote," age of, 2-3260
 as fur animals, 12-3572
 ascend in balloons, 22-6127
 dogs that tend, 2-482, 11-11; 21-5579
 in America, 1-18; 12-3572
 in Australia, 6-1633, 1872, 1874, 10-2606
 in Canada, 1-325, 22-323
 in New Zealand, 6-1400
 in Tasmania, 6-1874
 killed by kea, 7-1769, 1768
 many varieties of, 2-467-10
 of Bedouins, 22-6088
 problem concerning, 2-491
 seeds carried by, 12-3295
 skins of, 10-2666, 11-3834, 12-2106; 22-6218
 starved by field-voles, 2-508
 Ulysses and the, 1-76
 wool of, 12-3228
 see also Wool
 Sheep-bait, injures sheep, 12-3304
 Sheep Camp, in Alaska, 2-2149
 Sheep-poison: see Lambkill
 Sheepshank: see Knots
 Sheet-bend: see Knots
 Sheffield, Eng., cutlery of, 12-4502
 Sheikh, a statue, 12-3845
 Sheikh, of Arab tribe, 12-3862, 22-6098
 Sheldrake, a duck, 6-1563
 Shelley, Percy Bysshe, English poet, 22-6086
 poems see Poetry Index
 portrait bust of, 12-4672
 Shell-fish, cast shells, 2-2350
 destroyed by starfish, 2-2412
 disappearance of, 12-4878
 dye from, 20-5200
 Indian food, 10-2578
 not true fishes, 2-672
 roof of mouth of, 2-3337
 Shells, collection of, 12-4827
 drawing, 22-6161
 fanties inside the, 7-1727
 for boats, 12-3900
 for money, 12-3845
 for spoons, 12-4805
 for voting, 20-5203
 fossil, 11-2917
 Indian use of, 1-20
 of animals, 4-916, 6-1420, 1426-27; 10-2463, 2611, 2616
 of snails, 12-3911
 origin of, 12-3773, 3777
 problem concerning, 10-2588
 story of, 22-5887
 used for caddis-cases, 12-3805
 Shells, for guns, 12-2623, 22-6149, 6160, 6206
 Shelter, easily made, 22-6009
 Shenandoah, ship, 2-2053
 Shenandoah Valley, and Washington, 3-775
 during Civil War, 3-2045
 Shenstone, William, poems, see Poetry Index
 Shepherd, and dogs, two paintings of, 24-6223
 Macedonian, 12-3245
 of Hungary, 21-5659
 the greedy, 4-1048
 Shepherd-boy, lonely, 22-5683
 of the East, 17-4384
 Shepherdess, of porcelain, 12-4670
 the wandering: see Selwyn, Maria
 Shepherd-Kings: see Hyksos
 Shepherd's May, a dance, 11-3905
 Shepherd's Furse, a flower, 12-4210, 4211
 "Shepherd's Song," by Uhland, 12-3396
 Sheraton, Thomas, cabinet-maker, 22-6172
 Sheraton, style of furniture, 22-6177
 Sherbrooke, Canadian town, 20-5295
 Sheridan, General (Philip H.), during Civil War, 2-2061, 2064
 Sheridan, Richard Brinsley, dramatist, 2-714
 Sheridan, ship, in the Arctic, 22-5482
 Sherman, George, portrait, 4-1003
 Sherman, Thomas, and West Point, 12-4725
 Sherman, General (William B.), and "Marching through Georgia," 12-5045
 during Civil War, 2-2061, 2064-65
 statues of, 12-5308; 12-4166; 12-4073; 22-6218
 Sherwood Forest, in "Ivanhoe," 7-1699
 outlaws of, 10-3619
 "She Stoops to Conquer," by Goldsmith, 7-1759
 Shetland Islands, story of, 2-4672, 22-6127
 "She Wore a Wreath of Roses," song, 12-3768

GENERAL INDEX

- Shibak, Arabian window, 22-6105
 Shield, for tunnel-building, 2-605
 of Achilles, 1-78
 of Athene, 4-1051
 of Lancelot, 5-1199
 painting a, 2-1951
 Shillbess, George, buses of, 22-6053
 Shillbess, name for buses and hearses, 22-6053, 6055
 Shiloh Church, battle of, 2-2047
 Shin-bone, of the leg, 10-2571, 2574; 12-4201
 see also Tibia
 Shingle, a kind of rock, 2-429; 12-3046;
 22-5887-88
 Shining Ones, characters in "Pilgrim's Progress," 5-1128, 1185-86
 Shiny, a game, 20-5221
 Shinowara, cocks of, 22-6217
 Ship-building, in Norway, 14-3662
 magnets and, 21-5528
 Shipka, battle of, 12-3242
 Ship of the desert: see Camel
 Shipp, Lieutenant, and baboon, 21-5506
 Ships, and astronomy, 2-1262
 beneath the waters, 22-5857
 camouflage of, 12-3509
 capture of French, 2-1296
 Czar Peter and, 12-3724-26
 floating of iron, 2-695
 for appliqué work, 12-5020
 full-rigged, 12-3951
 how to know sailing, 12-3959
 how to understand, 12-4618
 indicate roundness of earth, 1-7
 Maynard and burning ship, 14-3739
 model used by Admiralty, 14-face 3574
 of British navy, 14-3573
 of concrete, 12-4242, 4243
 of Norsemen or Vikings, 2-273; 14-3662
 of our navy, 22-6203
 of the United States, 2-1292, 1296-98, 1400
 on fire, 22-5760
 passage through Panama, 21-5592, 5600
 rescue from, 12-4029
 saving the Suevic, 2-1414
 smoke goes other way, 7-1884
 speed of, 14-3674
 stern of, 12-4619
 story of, 1-79, 81
 teak-trees for, 2-2362
 warned during fog, 24-6317
 water-line of, 2-1588
 see also Birkenhead
 Shipton, Mother, story of, 2-2065
 Shipyards, in Germany, 11-2764
 taken by Confederacy, 2-2044
 Shire, meaning of, 2-466
 Shire, river in Africa, 12-4300
 Shireen, and the true cross, 12-3858
 "Shirley," by Brontë, 10-2625
 Shirpuria, Asiatic city, 12-4940
 Shirt-waists, closet for, 11-2722
 Shivering, cause of, 2-2247
 Shock, jump on getting, 11-2910
 treatment for, 12-5032, 5126
 Shoe-bag, of serge, 10-2587
 Shoe-lace, button made of, 20-5351
 Shoemakers, patron saint of, 4-1029
 relics of Roman, 11-2768
 Shoes, Egyptian, 12-4844
 machinery for, 11-2717
 made at Mainz, 11-2768
 making by hand, 12-3110
 manufacture of, 10-3686
 removing from injury, 12-3964
 story in a pair of, 12-4101
 to clean, 17-4494
 Shocks, Christopher F., typewriter and, 11-2718
 Shoshone, Arab tribe, 22-6097
 Shooting stars: see Meteors
 Shops, for Modetown, 2-615
 Shore-birds, various, 2-2341
 Shore-dweller, of Newfoundland, 24-6293
 Short-nightdress, cause of, 12-4331
 Shortstop: see Baseball
 Shot, General's experiment with, 7-1679
 Show, of bombardier-beetle, 12-3454
 Shoulder-blade, a bone, 10-3468, 3572
 fracture and dislocation of, 17-4282-83
 see also Scapula
 Shoulder-joint, of the body, 10-3573
 Shovel-shove, a game, 12-5159
 Shovel, the Chancelley swimmer, 12-4090
 Showers, of meteors, 12-3249
 Showers, in Louisiana, 22-5920
 Shrew, burrowing animal, 2-625-26; 21-5573
 Shrike, a bird, 7-1802; 12-3462
 Shrimp, a crustacean, 2-1421; 12-2611, 2612, 2615; 17-4498
 Shrines, in India, 2-1222
 Shrubs, American, 17-4557
 Shumer, Land of, in Asia, 12-4960
 Shuttlecock, and battledore, 14-3556
 Shying, what it is, 2-290
 Shylock, character in "Merchant of Venice," 2-330; 21-5590
 Siam, gems from, 24-6321-22
 Siberia, and furs, 12-5072, 5074
 animals in, 1-52, 161
 bloodstone from, 24-6279-80
 conquered by Cossack, 14-3724
 exiles to, 14-2726; 15-3798
 gold in, 20-5318
 people of, 12-3798, 3303
 sandals in, 12-3108
 snow-waves in, 10-2534
 Siberian Railway, 12-3204
 Sicily, King of, Shakespearian character, 2-562
 Sicily, and Germany, 10-2555
 arms of, 7-1658
 fruit from, 2-650
 history of, 22-5850
 island of, 12-3073-74, 3085-86; 20-5202, 5208, 5274, 5276
 kingdom of, 12-3082
 legendary history, 1-75, 78
 magic boy fiddler, 2-578
 subject to earthquakes, 12-3251
 Sickle, for harvesting, 11-2713; 12-4152
 Sickness, cause of, 12-3179
 Sicknesses, characters in "Blue Bird," 22-5839
 Sick-room, plants in a, 2-1417
 Side-winder, a rattlesnake, 14-3625
 Sidney, Colonel, son of, 12-4568
 Sidney, Sir Philip, aided Netherlands, 14-3546
 English soldier, 2-474-75
 friends of, 21-5484, 5486
 poems: see Poetry Index
 Sidon, Asiatic city, 20-5202
 Siena, Cathedral of, 11-2788
 Sienkiewicz, Henri, Polish author, 20-5142
 Sierra Leone, British colony, 11-2942
 Sierra Morena, in Iberian Peninsula, 12-3338
 Sierra Nevada, in Iberian Peninsula, 12-3337
 Sierra Nevada Mountains, in North America, 1-10; 7-1830
 Sieve, of spider: see Spiders
 Sight, and touch, 21-5517
 centre of, 12-3820
 distance of, 14-3567
 of both eyes, 14-3570
 of plants, 11-2799
 without brain, 14-3570
 Sigismund, Holy Roman Emperor, and Frederick IV, 10-2560
 incidents in reign of, 11-2900, 2903; 12-3190
 Sign, of colonial shop, 4-366
 of king, 12-4846
 Signals, Morse alphabet in, 17-4444
 on railways, 2-312
 smoke, 2-2283
 with flags, 12-5122
 with heliograph, 17-4441, 4446
 see also Semaphore-signals
 Signboards, wind and the, 21-5474
 Sign-language, for deaf and dumb, 20-5251
 of Red Indians, 2-2268
 Sign-pole: see Totem-pole
 Signpost, problem concerning, 2-726
 Signs, writing by means of, 12-3480-84;
 12-4957, 4963, 4964
 see also Writing, cuneiform
 Sikes, Bill, character in "Oliver Twist," 2-22207
 10-2562
 Sikkim, in British Empire, 2-1119; 7-1720; 12-4081
 "Siles Warner," by Eliot, 10-2626
 "Silence Broken," by Brush, 12-4252
 Silence, Land of, in "Blue Bird," 22-5837
 Silenus, a god, 22-5682
 Silenus, girl who helped, 12-4027
 history of, 12-5661; 11-2766; 17-4552-54
 map sent to Louisa of Prussia, 12-3598
 province of, 10-2592, 2596; 11-2902, 2904, 2906
 Silesian War, history of, 17-4554
 Silhouette, Mlle. de, portraits of, 21-5841
 Silhouette, a kind of portrait, 21-5841
 Silica, in quartz, 2-1222
 Silico, burned, 2-618
 salts of, 12-4876

GENERAL INDEX

Silcock, sand is, 20-5396
 Silk, adulteration of, 7-1839
 and electricity, 2-2153, 2158
 Asiatic trade in, 12-3337-38
 in France, 2-5430
 in Italy, 12-3398
 in Persia, 12-3382
 in Switzerland, 12-3392
 manufactures in Germany, 11-3758
 strength of, 2-1191
 threads of, 2-3336
 United States manufactures of, 12-3686
 wonder of a piece of, 7-1823
 see also Byssus, Mussels, Spiders
 Silkworm, disease of, 7-1239; 24-6364
 moth of, 7-1823; 12-3018
 Sils, Edward, poem: see Poetry Index
 Stillman, Dr. (Massachusetts), and oil, 12-4146
 Silt, for feed, 10-3681
 Silver, Long John, in "Treasure Island,"
 12-3613
 Silver, Miss, character in "John Halifax,"
 12-3975
 Silver, alloys of, 7-1888; 22-5879
 and uranium, 12-4276
 coinage of, 2-3278
 cutlery, 12-4804
 for mirrors, 2-1246
 furnished by colonies, 4-994
 in Australia, 2-1272, 1274
 in Canada, 21-5548; 22-6094
 in Chile, 20-5366
 in Mexico, 17-4400
 in Ontario, 1-228
 in Peru, 12-4611
 in Russia, 12-3798
 in Tasmania, 6-1372-74
 metallic element, 5-1281, 1317; 2-2152;
 12-3328
 of Bolivia, 12-4606
 plating of cutlery, 12-4804
 production of, 12-3680
 tarnishing of, 7-1792
 Silver-fox, a fur-animal, 12-5078
 Silverhorn, in Switzerland, 22-5846
 Silver Roll, pay in Canal Zone, 21-5598
 "Silver Seas," about Britain, 2-1113
 "Silver Shakes!" see "Hans Brinker"
 Silver-streak: see English Channel
 Silver-wood, flowers of, 12-4184
 Silvia, Shakespearean character, 2-439
 Simcoe (John G.), as governor of Canada, 2-1281
 Simcoe, Lake, in Canada, 1-228
 Simla, city in India, 2-1334
 Simmons, M. M., American painter, 12-4258
 Simon, Jewish general, 24-6332
 Simon, named Peter, 12-2578
 Simonides, character in "Ben Hur," 20-5258
 Simon says, a game, 2-3141
 Simon's Bay, Birkenhead sunk in, 7-1818
 Simoon, desert wind, 22-6105
 Simplicius, a Roman Christian, 4-982
 Simplicius Pass, over Alps, 12-3991; 24-6259, 6262
 Simplicius Tunnel, under Alps, 12-3992; 24-6259,
 6263, 6270
 Simpson, Sir George, and Hudson's Bay Com-
 pany, 12-4334
 Simpson, Dr. James, and ether, 12-4625, 4621
 Sims, J. Marion, American physician, 12-4633
 Sinal, desert of, 24-6353
 Sincere, character in "Pilgrim's Progress,"
 2-1185
 Sindbad, the sailor, 2-791
 "Sindbad the Sailor," character in "Count of
 Monte Cristo," 17-4454
 Sins, of the snake, 22-2574
 of the body, 12-4647
 Singer, Isaac M., and sewing-machine, 11-2717
 Singer Building, in New York, 12-5688; 12-5008
 Singer, and talking-machine, 21-5605
 child, of Florence, 12-3701
 Sings, and the monkeys, 22-3634
 Singing, among Indians, 11-3762
 and language, 12-4049
 Process of, 7-1852; 12-4993
 "Singing Master's Assistant," by Bulling,
 12-3019
 Singleton, Bob, story of, 22-4364
 Singsong, Singsong, in story, 2-317
 Singsong, manner of speaking, 22-4364
 "Singsong Life," by Phelps, 2-317
 Singsong, Indian tribe, 7-1241
 Singsong, song like mountain, 2-439
 for aquaria, 7-1241
 in New York aqueduct, 22-5196

Sisson, working of, 12-4092
 Sisson-barometer: see Barometer
 Sisson, name of, 12-4092
 Sisson, name of, 12-4092
 Sisson, name of, 12-4092
 "Sir Charles" character in "The
 7-1748
 Sir Donald, name of, 12-4092
 Siren, a myth, 12-4092
 Sirenia, development of, 12-4092
 Sirens, legendary creatures,
 12-4092
 Siribeddi, an elephant, 22-4092
 Sirius, a ship, 12-4092
 Sirius, spectrum of, 12-4092
 the Dog-star, 2-3091; 2-1270, 1271, 1272,
 1245; 12-4273
 "Sir Mortimer," by Johnston, 2-317
 Sisal, in Yucatan, 12-4092
 Sisal-hemp, for rope, 12-4092-94
 Sisters, three gray, 2-1273
 undying love of a sister, 2-322
 Sisters of Charity, order founded, 12-4092
 Sisters, the Seven, a waterfall, 12-4092
 istine Chapel, of the Vatican, 17-4609,
 12-6100-05
 Sisypheus, forever rolled stone, 12-3274; 22-4624
 Sitten, Camp-Fire Girls at, 24-3752, 3753
 in Alaska, 12-4089
 Sivetherium, 1-50
 Six Nations, Indian confederacy, 1-51; 2-3091,
 531; 4-898, 1004; 11-4774
 see also Iroquois
 Sixtus IV, Pope of Rome, and Sixtine Chapel,
 12-6106
 Size, for thread, 12-4291
 Skagway, in Alaska, 2-1212
 Skates, fishes, 2-1220; 12-4181-82
 Skating, on the St. Lawrence, 22-5326-27
 Skeena River, in Canada, 22-5750
 Skeleton, of building, 2-111, 571; 12-4092
 Skelton, Martha, married Jonathan, 2-317
 Skene, Mrs., daughter of Dean, 2-1283
 Skop, a bee-hive, 12-3353
 Sketch Book, by Irving, 2-1213, 1214
 "Sketches by Box," by Dickens, 2-2227; 12-4092
 Skies, men who mapped, 7-1275
 Skimmer, a bird, 7-1244; 2-3446
 Skimpole, Marcell, character in "Black Prince,"
 12-2450
 Skin, absorbs oils, 2-1223
 and headache, 12-4275
 and hot-air tube, 12-3583
 and its uses, 2-1221
 breathing through, 2-1223
 browning of the, 12-3778
 characteristics of, 2-1221
 electric waves that excite, 20-5244
 evaporation from, 7-1653
 forms corns, 12-4819
 in the eyes, 12-4023
 of fruit, use of, 22-5839
 of plants, 12-4013
 of potatoes, 12-4115
 of shark, 12-3120
 of snakes, 2-1227
 pigments in, 12-3473
 sensations of, 11-3200
 shell made from, 4-316
 structure, 11-2735
 teeth outgrowths of, 2-2077
 trace of eyes in, 12-4261
 waterproof, 2-593; 24-4117; 17-4370
 see also Leather, Molt, Parchment, Ridges,
 Vellum
 Skin, a lizard, 2-1211, 1219
 Skin, as money, 7-1234; 12-4234
 butter made in, 2-1113
 for signalling, 22-5491
 Indian skill in turning, 12-3576
 swimming on inflated, 12-4364
 Skin for snow-running, 12-5639; 22-6339-41
 12-4123
 in the Antarctic, 21-5491
 Skin, a name, 22-6161
 Skin, a name for Indians, 2-317
 Skin, a name, 12-40-42
 Skin, a name, 12-3917, 3918
 Skin, a name, 12-4092
 of vegetation, 2-3077-78; 12-4092, 4093
 2-317, 12-3333, 17-4252
 Skin, a name, 12-4092
 Skin, a name, 12-4092
 Skin, a name, 12-4092
 Skin, a name, 12-4092

GENERAL INDEX

- Smyth, Dr. William, of Burton Port, 2-474
 Snare, death of, 12-3911
 devoured by glow-worm, 12-3292
 for aquaria, 7-1727
 hibernation of, 24-6374
 invertebrates, 10-2462, 12-4827
 shells of, 4-816
 snail and bees, 11-2858
 teeth of, 2-2327
 Snake-bite, deaths from, 6-1382
 Snake-charming, 6-1294
 Snakeroot, black, 12-5086
 Snakes, and prairie-dog, 2-2443
 and secretary-bird, 7-1898
 cast skins, 2-2344, 2350
 creation of, 14-3866
 hibernation of, 24-6374, 6376
 in India, 6-1681
 Indian respect for, 1-18
 killed by ants, 11-2974
 limbs of, 10-2464
 movement of, 17-4487
 poisonous, 1-170, 2-816, 6-1379-86, 2-2172,
 12-4276, 24-6374
 reptile, 2-671, 673, 5-1209, 1219, 6-1378-79,
 1385
 skins for leather, 11-2824
 sleep of, 2-1290
 snake and crows, 24-6292
 snake and file, 7-1809
 teeth of, 2-2078
 worship, 6-1382
 see also Hydra, Kaa, Serpents, etc
 Snake's-head: see Pitylary
 Snap, game of, 12-4712
 Snapdragon, a flower, 8-1096, 1362
 see also Toad-flax
 Sneak-boats, of duck shooters, 6-1564
 Sneezing, action of, 7-1652
 cause of, 3-214, 12-4636
 Snell, character in "Pendennis," 12-3518
 Snipe, a bird, 2-1978, 2-2341
 Snodgrass, character in "Pickwick Papers,"
 10-2459
 Snorro, Norse child, 2-271, 4-959
 Snout, of insects, 12-3204-05
 Snow, Agnes of the, 12-3296
 and rain together, 2-2081
 and warm hands, 7-1655
 animals in, 7-1792, 12-3444
 brooks railways, 2-311
 crystals of, 2-1164, 1317, 2-2081, 10-2524-25
 does not freeze flowers, 12-3148
 for covering, 12-4046
 is water-vapor, 12-4086
 Kang's use for, 21-5478
 lightness of flake of, 12-3047
 melted by salt, 12-3910
 melting and Nile flood, 21-5424
 on mountains, 12-3906
 whiteness of, 2-1164
 why it comes, 2-1913
 "Snowbound," by Whittier, 2-1616
 Snow-bunting, a bird, 2-2111, 12-3458
 Snowden, mountain, 2-769
 Snowdrop, and the dwarfs, 2-2059
 Snowdrops, flowers, 2-617, 10-2582, 12-1816,
 20-5280
 how to draw, 2-745
 pattern of, 20-5285
 Snowflake, a bird, 12-3458
 "Snow-kings," see Gustavus Adolphus
 Snow-man, making, 10-2582
 Snow-plough, clears way, 2-311
 "Snow-Queen," authorship of, 6-1478
 Snowshoes, of Indians, 10-2576
 sport with, 20-5222, 5224
 Snowstorm, and heroism of Mrs Langdon,
 11-2816
 Soap, action of, 12-3226
 color of, 14-3776
 from coconut oil, 2-1998
 from crude oil, 12-4169
 lather from colored, 2-2251
 manufactured in France, 2-2422
 takes out dirt, 2-2251
 Soap-bubble, color of, 2-2251
 holding together of, 7-1793
 rising and falling of, 7-1796
 what to do with, 7-1794
 why round, 7-1798
 Soap-suds, color of, 2-2251
 Sobieski, John, king of Poland, incidents of
 reign, 10-2559; 11-2294, 2295; 12-2194
 Society Islands, discovery of, 2-1222
 Society of American Artists, 12-4221
 Sock, how to knit, 12-4222
 Sock, of poisonous mushrooms, 12-4222
 Sock-eye, a salmon, 12-2762, 12-4222
 Socrates, and the cyrenaic school, 12-4222
 comment on death, 12-4222
 death of, 2-212
 Greek philosopher, 2-1220, 2222-22, 12-4222,
 20-5208
 Soda, baking, 7-1817
 caustic, 7-1816
 hypochlorite of, 24-6269
 in glass, 2-1264
 washing, 7-1817
 Soda-water, action of, 2-622
 Sodium, and yellow flames, 22-5532
 in milk, 11-2222
 in soap, 12-3226
 in spectrum, 11-face 2726, 2728, 2741
 in the sun, 2-2094
 metallic element, 1-227, 2-1215-16, 6-1462;
 12-4017
 oxide of, 7-1816
 Sodium bicarbonate, in baking soda, 6-1462;
 7-1817, 12-3386
 Sodium carbonate, for softening water, 6-1224
 plants furnishing, 20-5218
 the soda of commerce, 6-1462, 1524, 7-1677
 Sodium chloride, in common salt, 7-1215, 1217,
 2-2364
 see also Salt
 Sofia, capital of Bulgaria, 12-3242
 Sogne Fjord, and Jostedal Glacier, 12-3652,
 3662
 "Sohrab and Rustum," by Arnold, 22-4022
 Soil, and its uses, 12-3249
 of garden, 2-2039
 Sol, the sun, 2-2249
 Solan-geese: see Gannets
 Solder, alloy of tin and lead, 7-1822
 of tin and lead, 10-2880
 Soldier-cells: see Blood, cells of
 Soldiers, among ants, 11-2968
 anagram from, 12-5037, 5132
 dancing princesses and the soldier, 2-256
 decorating graves of, 17-4468, 4469
 of India, 6-1628, 7-1713
 robbers and the, 12-3808
 saved Prince Emilus, 12-4026
 singing for, 12-3064
 tinder-box and the soldier, 12-4122
 Soldiers' and Sailors' Monument in New York,
 12-5014
 Sole, a fish, 2-1193-94, 10-face 2600, 2605-06,
 12-3847-48
 Solferino, battle of, 12-3084, 12-4292
 Solingen, salt field at, 1-229
 Solingen, German town, 12-4292
 Solitaire, extinct bird, 6-1592, 1510
 Solomon, king of Israel, 24-6330
 Solomon Islands, natives of, 6-1491
 Solomon's-seal, a plant, 11-2284, 20-5222
 Solon, Athenian law-giver, 2-1821, 11-2928,
 20-5204
 Solway Moss, rout of, 12-3140
 Somaliland, French, 2-2426
 Somme River, battles of, 2-771
 Son, dutiful sons, 2-2215
 farmer and his sons, 2-2217
 of a gun, 12-3274
 three sons and the old man, 12-3096
 who did his duty, 21-5565
 who returned home, 22-6023
 Sonatas: see Music, composers of
 Songs, American, 12-3049
 of birds, 2-2105
 of southern mountaineers, 12-3049
 old English, 12-3049
 that found Richard I, 22-6196
 writers of famous, 12-3766
 see also names of individual songs, Writers,
 famous German
 Song-sparrow, a bird, 12-3460
 "Songs without Words," by Mendelssohn,
 12-3292
 Song-thrush, egg of, 7-face 1760
 Sonnets, 22, by Bellini, 12-3294
 Sonnet, form of poetry, 2-622, 21-4424
 "Sonny," stories by Stuart, 2-2105
 Son of Ra, title of Egyptian king, 12-4222
 Sons of Daniel Boone, a boy's story, 2-2155
 Sons of Liberty, secret societies, 12-4222
 Sons of the Revolution, and the Revolution, 17-4467

GENERAL INDEX

- "**Sooi**," see Sault Ste. Marie Canal
Soot, for fertilizer, 12-3442
 for pot-plants, 2-2266, 14-3786
 is carbon, 14-3569
Sophocles, Greek poet, 2-1322
Sora, a game-bird, 2-2341
Sorbonne, in Paris, 21-5535
"Sorcerer" by Sullivan, 12-3293
Sorcerers, Indian; see Medicine-men
Sorel, Canadian town, 2-756; 23-6124
Sorrel, mountain, 12-4758
 see also Wood-sorrel
Soto, **Hernando de**, explored America, 2-274-75, 280
Souls, Bridge of, 5-1110
Souls, Land of, 5-1108
Soult, **Nicolas J. de Dieu**, French marshal, 17-4366
Sound, beautiful land of, 12-3171
 behavior of a, 19-5057
 conveyed by wall, 20-5177
 everlastingness of, 20-5177
 feeling a, 12-3225
 reflection of, 19-5024
 speed of, 14-3677
 what it is, 2-517; 4-1083
Sound, **The**, passage near Denmark, 14-3658
Sounding-boards, use of, in musical instruments, 5-1087, 1089, 1092
Sound-waves, and fog, 15-4019
 and resonators, 14-3774
 behavior of, 2-335; 2-313; 10-2471; 13-3391; 14-3780; 15-3916; 17-4579; 19-4870; 20-5241; 24-6356
 conveyance of, 15-3997
 effect of, 19-4880
 of the voice, 16-4096
 striking ear, 15-3912-13
South, daughter of the, 7-1913
 states forming the, 23-5957
South Africa, and German colonies, 11-2772
 birds of, 7-1895, 1898
 exhibits of, 20-5330
 gems from, 24-6380
 gold in, 10-2678
 history of, 5-1113, 1120; 16-4080
 life and people of, 7-1780
 locust-storm, 12-3194, 3196
 plants of, 15-3889, 3893
 Portuguese in, 13-3343
 school republic in, 24-6390
South African War, mules in, 10-2678
South America, and Darwin, 4-864
 and its conquerors, 17-4505
 and Monroe Doctrine, 7-1838; 13-3491
 and Portugal, 2-282
 animals in, 2-679, 681-82, 802; 4-876; 17-4510; 23-6001
 birds of, 6-1506-07; 7-1763-64, 1897, 1900, 2-1975-77; 22-5752
 cotton in, 2-2384; 19-4585
 exhibits from, 20-5330
 explorations, 4-864, 867
 fishes of, 10-2479-80
 furs from, 19-5072
 gems from, 24-6380
 history of, 13-3346; 16-4078
 insects of, 12-3201; 13-3298, 3361
 map, 17-4507
 natives of, 17-4506
 nuts of, 2-1998
 pampas of, 12-3129
 reptiles of, 5-1213, 1216; 6-1380
 republics of, 16-4003
 rubber in, 22-5795, 5798
 school republics in, 24-6390
 sugar in, 2-703
Southampton, town in England, 6-1415
South Australia, history of, 6-1372
South Carolina, and Nullification, 7-1840; 10-2440; 12-3491
 cotton manufactures of, 10-1684; 19-4386
 description of, 22-5958
 during Revolution, 4-1008, 1008; 6-3392
 early history of, 2-276-551; 4-895
 flower of, 22-5816
 palmetto and, 21-5482
 secession of, 2-787, 788; 2-2044; 13-3492; 22-5957
South Dakota, admitted, 12-3494
 flower of, 22-5816
 gold in, 10-2478
Southey, **Robert**, a constellation, 2-1397;
Southern Fish, a constellation, 10-2645
Southern Pacific Railway, engines of, 2-314
Southey, **Robert**, anagram from name, 12-5037, 5132
 comment on "Rule, Britannia," 14-3766
 English poet, 11-2755
 poems; see Poetry Index
South Georgia, reached by **Vespucci**, 2-272
South Island, part of New Zealand, 2-1436, 1490
South Kensington Museum, in London, 2-762
Southland, New Zealand, 2-1490
South Pole, discovery of, 21-face 5454
 of Mars, 2-2255
 on map, 7-1766
 reached, 2-2352
South River, Dutch name for Delaware, 2-282
South Seas, islands of, 15-3339
 one ship to, 4-1043
Southwark, part of London, 2-493
Southwest Wind, in "King of the Golden River," 6-1527
Southworth, **Mrs. Emma (D. M. W.)**, American writer, 2-2095
Sovereign, British coin, 14-3650
 man who found, 23-6027
Sow, cat and eagle, 12-4867
Sowerberry, **Mr. and Mrs.**, characters in "Oliver Twist," 10-2564
Sow-thistle, a plant, 15-4012; 16-4136, 4207-08
Space, end of, 16-4274
 measurement of, 14-3671-72
 moving of things in, 10-2539
 no man can measure, 1-face 1
 not empty, 10-2541, 2546
 size of, 7-1787; 21-5514
 three dimensions of, 15-3999
Spada, **Count of**, and **Cardinal**, characters in "Count of Monte Cristo," 10-4320
Spade, carried chickweed, 15-3890
 gardening tool, 1-249
 mending a, 16-4294
Spain, **King of**, and **Titian**, 2-762
Spain, and Africa, 16-4307-08
 and Carthage, 20-5278
 and Ceuta, 15-4027
 and Charles V, 10-2556; 11-2898
 and France, 2-2068; 2-2238; 17-4362, 4366
 and Germany, 10-2555, 2558
 and Italy, 12-3080, 3082
 and Morocco, 2-2426
 and Peru, 2-2225
 and Sir Walter Raleigh, 21-5412
 and South America, 7-1838
 and the Netherlands, 14-3544, 3593
 and United States, 6-1389, 1391, 1396; 7-1836, 1838
 animals in, 2-290, 408
 Arabs in, 15-3858
 art in, 17-4590
 bull-fighting in, 13-3345
 colonial possessions of, 11-2771; 14-3546
 costumes of, 12-3436
 during Seven Years' War, 4-900
 flag of, 7-1659; 21-5494
 fruit in, 2-650
 gloomy king of, 22-5342
 gold in, 20-5318
 history of, 1-134; 2-426; 4-556, 862, 1040, 1043, 5-1115; 2-1953; 12-4745; 22-5850
 in the New World, 1-62; 2-272, 274, 282, 521; 4-892, 895, 900; 16-4077-78
 Jews in, 24-6334
 metals in, 10-2650
 paper manufacture in, 12-3484
 Roman church in, 10-2552
 sandals in, 12-3106
 story of, 12-3237
 trouble over Virginia, 12-3492
Velasquez's pictures in, 2-764
 war with England, 2-280; 22-5850
 war with India, 24-6274
 see also Armada, Cuba, Spanish-American War, Spanish Succession, war of, etc.
Spaniards, and bloodstone, 24-6379
 and horses, 22-6058
 in Brazil, 22-5271
 in California, 7-1846
 in Cuba, 2-2154
 in Ireland, 21-5409
 in Mexico, 17-4399
 in Philippines, 2-2152
 in South America, 12-4664
 in West Indies, 22-5641
Special, and **law**, 22-5513
Spanish-American War, history of, 12-3494

GENERAL INDEX

Spanish Main, of America, 12-4077
 site of, 17-4512
 Spanish moss, an air-plant, 21-5123
 Spanish Peninsula see Iberian Peninsula
 Spanish Succession, war of the, 2-229; 12-4560;
 11-2315; 12-3073; 12-3144
 see also Queen Anne's War
 Spanish War, and navy, 22-4393
 and West Point, 12-4725
 history of, 2-2373
 Philippines in, 2-2153, 2154
 United States navy in, 12-3010
 Spanker, a sail, 12-3451
 Spar, of ship, 12-3953
 Spar, character in "Cobblers and the
 Cuckoo," 2-2311, 2323
 Spark, in motor-car, 7-1737
 when steel is knocked by stone, 4-1035
 Sparrow, a bird, 2-672, 2-2212, 2220, 2345,
 2350, 12-3460
 egg of, 7-face 1756
 nests of, 22-3751
 see also Java-sparrow
 Sparrow-hawk, a knight in "Geraint and Enid,"
 2-1953
 Sparrow-hawk, a bird, 7-1899, 1900, 12-2153
 cuckoo resembles, 12-2453
 egg of, 7-face 1760
 nest of, 22-5743
 Sparrow-hill, of Moscow, 12-2300
 Sparta, history of, 2-1221, 1234; 7-1819; 20-5150,
 5201-02, 5203
 Spartacus, slave-leader, 11-2940
 Spasm, of muscle, 17-4432-34
 Spat, young oysters, 10-2612, 12-2353-54, 2957
 Spatha, of a flower, 12-4554
 see also Skunk-cabbage
 Spawn, of mushrooms, 12-4822
 of shell-fish, 12-3552, 3553
 Speaker, of House of Representatives, 2-1435
 Speakers, and best thinkers, 22-5395
 Speaking, process of, 7-1652, 15-3997
 see also Voice
 Spear, enchanted, in "Faerie Queene," 2-700
 Spear-grass see Couch-grass
 Spear-thistles, and goldfinches, 12-4203
 Specimens, bag for, 22-6079
 geological, 12-4220
 Spectacles, help sight, 22-5721
 lenses of, 12-2654
 use of, 2-2332, 12-4334, 17-4426, 4526
 Spectator, a periodical, 12-4724-25
 Spectator-Club, in "Tattler," 12-4724
 Spectroscope, astronomical instrument, 2-1969;
 11-2738, 2740, 2742
 for nebulae, 11-2844
 Spectrum, colors of, 17-4524, 20-5242
 kinds of spectra, 11-2844
 meaning of, 11-face 2736, 2740
 of elements, 20-5168
 of heat-rays, 20-5244
 of light, 20-5156
 of sunlight, 7-1577
 Spectrum analysis, meaning of, 11-2738, 2741
 results of, 20-5166, 5167
 Speech, centre of, 12-3821
 freedom of, 12-2596
 of animals, 2-1287 2-1412
 of flowers, 2-1222
 of men, 2-1286, 12-4022
 of parrots, 2-1287, 12-3227
 Speed, Harold, picture of Rosalind, 21-5522
 Speed, measuring, 2-2356
 "Speed, my Mark, Speed on," by Arnold,
 12-3753
 Speedwell, ship, 2-526
 Speedwell, the Germander, 17-4356
 see also Veronica
 Speke (John H.), African explorer, 2-202
 Spelling-book, a game, 1-252
 Spencer, Herbert, and the mind, 12-4759
 comments of, 12-3537; 12-3522, 3523; 12-4022,
 17-4322
 English philosopher, 2-219, 245, 271
 sayings of, 12-4212
 thinking of, 12-4021
 Spenser, John, character in "David Copper-
 field," 11-2847
 Spenser, Mr., character in "David Copper-
 field," 11-2847
 Spenser, Edmund, English poet, 2-237;
 21-4110-11, 4454, 4457
 Spent, product of whale, 4-1469, 1921
 Spent-oil, for lamps, 2-243
 Spent-whale see Cachalot, Whale

Sphagnum, bog-mosses, 12-5025
 Sphenodon, a reptile, 2-1112, 12-17-18; 12-2222
 Sphinx, Avenue of sphinxes, 12-2222
 built of nummulites, 2-1112
 imaginary monster, 2-1112
 in Egypt, 12-4171, 4172; 12-4222, 4223;
 22-3159
 riddle of the, 12-2723
 Sphinx of War, 2-1112
 Spice, a star, 12-5432
 Spice Islands, in the West Indies, 12-2222
 Spices, from Dutch East Indies, 12-2222
 in Arabia, 12-2222
 Spider-arabi see Crab
 Spiders, feign death, 12-2454
 legs of, 2-2227
 life history of, 12-2225-23
 Shetland shawls and spider, 22-4127
 thread of, 2-2224
 web of, 2-320, 4-916, 5-1191-92
 Spiderwort, grows in water, 12-2552
 Spies, of the American Revolution, 12-2222
 of the Sultan, 12-2222
 Spikenard, wild, 11-2222, 12-4760
 Spikes, of lizards, 2-1212
 Spile, for maple-sap, 12-2502
 Spills, of paper, 2-212
 Spinach, cultivation of, 12-2963
 Spinalism, saved by children, 4-222
 Spindle, in story of Sleeping Beauty, 7-1703
 Spines see Backbone
 Spines, of fishes, 10-2703-09
 of plants, 12-2212
 of sea-urchin, 2-1427
 Spinnet, a musical instrument, 2-1022
 Spinifex, Australian plants, 2-1276
 Spinnerets, of silkworm, 7-1226
 of spider, 2-2234, 12-2222
 Spinning, of things when one is dizzy, 2-2227
 Spinning-frames, for cotton, 12-4596
 Spinning-machines, for cotton, 12-4596
 Spinoza (Baruch), on death, 12-4212
 philosopher, 22-6222
 Spiras, various, 12-5026-27
 Spires, of churches, 2-1259
 Spirit, of flowers: see Flowers, spirit of
 Spirit-Land, of the Indians, 12-2579
 Spirit of the Great Lakes, group of, 12-4575
 Spirits, methylated, 7-1222
 Spirituals, negro songs, 12-2054
 Spithead, sham fight at, 12-2724
 Spittle: see Saliva
 Spitzbergen, island of, 21-5453
 Spleen, an organ of the body, 2-1401
 Splices, sailors', 12-2222
 Splints, use of, 12-2963, 12-4222
 Split Rock Rapids, in St. Lawrence, 22-6123
 Spofford, Harriet Prescott, poems, see Poetry
 Index
 Spokes, seeing, 12-5026
 Sponges, for growing seeds, 12-2522
 Greece famous for, 12-4249
 hold water, 12-4276
 invertebrates, 12-2463, 12-4266, 12-4276
 in West Indies, 22-6045
 life of, 12-1265
 partnerships of, 2-2410
 to clean, 17-4494
 Spools, and bricks, 17-4226
 for rope-making, 12-4010
 Spoon and peanut race, for swimmers, 11-2722
 Spoonbill, bird, 2-1976-77, 2-2241
 Spoons, a game, 12-5025
 guessing with wooden, 22-5919
 manufacture of, 12-4201, 4204, 4207
 of buffalo horn, 2-272
 saved by Dolly Madison, 2-229
 Spores, of fungi, 12-4522
 Spots, of Indiana, 11-2722
 Spots, before eyes, 12-2046
 of the eye, 17-4422, 4427
 seeing black spot in the sky, 1-25
 the blind, 1-112; 17-4422, 4427
 the great red, 22-5221
 yellow, 17-4427
 see also Sun-spots
 Spout, various, 12-2222
 Spout, battle of, 2-2222
 Spout, treatment for, 12-2440, 17-4222-23
 Spout, fish, 12-2222, 2201-02; 12-2222-23
 Spray, of trees, 21-5432
 Spread Eagle, sign of the, 22-1277
 Spree River, in Germany, 12-2522; 12-2522-23
 Spring, near Asheville, N. C., 12-2222
 Spring, stars in, 12-2222
 Spring-beauty, a flower, 12-2222

GENERAL INDEX

- Spring Garden Road, in Halifax, 21-5545
 Spring-motor, of talking-machine, 21-5602-03
 Spring-mushrooms: see Death-cup
 Springs, carriage, 23-6053
 for clocks, 6-1540
 Springs, Mammoth Hot, 3-583, 585
 Spring-water, comes from sky, 8-2007
 Spruce, a tree, 4-842; 14-3733-34; 20-6352
 for pulp, 21-5543
 see also Fir, Douglas
 Spruce-fir, European tree, 14-3749
 Spruce-partridge, a bird, 12-3151
 Spuma, means foam, 12-3045
 Spar, of flower, 12-4135
 Spurge-laurel, a plant, 17-4474, 4476
 Spurn Head, wreck of, 7-1743
 Spy, a dwarf, 8-2398
 "Spy," by Cooper, 6-1610
 Square, law of inverse squares, 10-2536
 patterns made from squares, 8-2333
 problem of the magic, 8-2356, 2522
 puzzle of, 19-5130; 20-5354
 queer pictures built up from squares, 5-1097
 railway-train built up from squares, 7-1855
 to form a, 22-5741
 using carpenter's, 2-384
 Squash, cultivation of, 13-3325; 15-3968
 hair-dressing and the, 14-3628-29
 Squatters, in Australia, 6-1370, 1372
 Squatters-sovereignty, the idea of, 8-2043
 Squaws, Indian, 1-18; 11-2783
 Squeezers, Fanny, character in "Nicholas
 Nickleby," 10-2871
 Squeezers, Mr. Wackford, character in "Nicholas
 Nickleby," 10-2869
 Squeezes, of stone inscriptions, 19-4958
 Squids, varieties of, 10-2484
 Squier, George O., and ocean-telegraphy, 17-4446
 Squills, flowers, 12-4658; 20-5230
 see also Bluebells
 Squire, in "Canterbury Tales," 15-3939
 Squirrel, Tom, in Catching a Thief, 9-2182
 Squirrel, an animal, 3-803-04; 4-1012; 15-3896;
 21-5577
 and the corn, 21-5452
 flying, 3-803-04
 fur of, 19-5074
 winter sleep of, 24-6375
 see also Chipmunk
 Squirrel-corn, a flower, 11-2979
 Srinagar Bridge, in Asia, 1-37
 Stables, cleansing the Arabian, 20-6185
 Stadoona, Indian village, 3-554-55, 558
 Stahl-Holstein (A. L. G. M., Baronne de), French
 writer, 18-4750; 19-4946
 Star, in music: see Music-lessons
 Star, tale of, in Europe, 2-427
 Star-of-life, bread called, 8-2085; 22-5726
 Star, and Cypris, 22-5775
 capture of Diana's, 12-3374; 20-5185
 hunt the, 15-4040
 in the ox-stall, 12-4867
 looking into the water, 11-2963
 Star-beetle, an insect, 12-3194
 Stage, building a model, 18-4822
 Stage-coach, of England, 23-6051
 Stages, in New York, 23-6057
 Staggerwort: see Ragwort
 Stag-waterfall, in England, 17-4373
 Stains, and their remedies, 21-5644
 cause of, 20-5177
 how to remove, 2-488
 State-driver: see Bittern
 Staking-machine, for leather, 11-2840
 Stalactites, in caves, 8-1306, 1308; 6-1377;
 21-5473
 Stalagmite Hall, in Mammoth Cave, 5-1308
 Stalagmites, of Mammoth Cave, 5-1308, 1308-09
 Stambul, or Constantinople, 12-3241; 15-3856
 Stems of flowers, 15-3316; 16-4134, 4208
 Seven Act, what it was, 4-995
 Statue of Wild Women, a statue, 12-4674
 Stamping-machine, in gold-mining, 20-5325
 Stamp, puzzle about, 1-110
 Standard, of pea-flower, 16-4135
 Standard, sacred, 12-3123-34
 see under name of country, as England,
 standard flag, etc.
 Standard, town of the, near Northallerton,
 3-593; 12-3123-34
 Standard, for cavalry, 21-5494
 Standard, Miles, and Plymouth Colony, 2-530
 Standard, of fire-boats, 22-5759
 Standard, from boxes, 11-3724
 Standard, sort of, and printing-press, 14-3614
 Stanley (Lord Frederick A.), governor of
 Canada, 5-1281
 Stanley, Sir Henry M., African explorer, 2-801
 Stanley, William, English preacher, 3-622
 Stanley Falls, in Africa, 16-4400
 Stanley Park, in Vancouver, 1-222, 225; 22-5781
 Stanton, Edwin M., Secretary of War, 8-2040
 Stanton, Elizabeth Cady, and Woman Suffrage,
 12-3120
 Stanton, Henry Brewster, abolitionist, 12-3121
 Stars, in Switzerland, 22-5847
 Star, in flag, 21-5491, 5494
 Star-anemone: see Star-flower
 Starboard, of ship, 12-4619
 Starch, a carbon compound, 11-2728
 digestion of, 8-2172; 9-2365-68
 grains of, 21-5513
 in potato, 4-1020
 source of alcohol, 7-1890
 stiffens clothes, 17-4487
 Star-Chamber, in Mammoth Cave, 5-1308
 Starfish, a marine animal, 2-672; 6-1420, 1424;
 2-face 2404, 2407-08, 2412; 14-3665
 see also Brittle-star, Feather-star, etc.
 Star-flower, a plant, 11-2882
 Stark, John, during Revolution, 4-1000, 1004
 Starlings, birds, 8-2215, 2218; 22-5751
 egg of, 7-face 1760
 Star-maiden, and the water lily, 5-1111
 Star-mist, a nebulous star, 8-1968
 Star of Bethlehem, a plant, 20-5220
 Stars, and Elizabeth's reign, 8-1966
 and gravitation, 12-3511; 14-3587
 are suns, 8-1964
 as we see them, 10-2637
 bigness of world of, 7-1790
 characters in "Blue Bird," 22-5839
 close together, 5-1288
 color of the, 11-2737
 cooling of, 8-2094
 dark, 8-1968; 16-4110; 17-4428; 22-5872
 double, 17-4428
 fixed, 10-2544, 2637-38
 hidden, 18-4895
 in constellations, 10-2539
 in daytime, 2-318
 in Milky Way, 7-1881
 jagged edges of, 11-2911
 kept in their places, 8-1162
 legends of the, 12-3273
 light of, 8-1969; 10-2535; 20-5167; 22-5722
 maps, 10-2639, 2641, 2643, 2645
 movement of, 17-4482
 names of, 8-2249
 number of, 14-3779; 16-4110
 on United States flag, 7-1663
 paper, 23-6084
 paths of, 11-3740
 shape of, 8-2086; 11-2911
 size of, 17-4481
 Spanish Armada, and the star, 8-1961
 spectra of, 11-face 2736, 2740
 story of, 1-141, 144
 trains to, 1-face 1
 transformed into nebulae, 11-2846
 twinkling of, 4-912; 21-5513
 use of invisible, 12-3513
 various kinds of, 8-1969
 what made of, 4-912
 where stars come quickly, 8-2362
 see also Astronomy, Meteors, Pole-star
 Stars and Stripes: see America, flag of
 Stars of the earth: see Glow-worm
 Star-spangled Banner: see America, flag of
 "Star-spangled Banner," by Key, 21-5494
 national anthem, 8-1399; 12-3052; 17-4465, 4468
 Starters, are microbes, 4-906
 Starvation, cause of death, 10-2655
 State, and the church, 12-4730
 in a school, 24-6390
 State Department, building, 7-1693
 State House, in Boston, 20-5399; 24-6239
 "Stately Homes of England," by Hemans,
 22-5939
 Staten Island, part of New York City, 12-5007
 water for, 20-5198
 States, and articles of confederation, 6-1399
 and Congress, 6-1455
 and Constitution, 6-1392
 and president, 6-1456
 and representatives, 6-1455
 flag of: see Flag, story of American
 flowers of, 22-5812
 formation of, 6-1427
 of the church: see Papal States

GENERAL INDEX

- States, suits tried by Supreme Court, 8-1437
States-General: see Assembly, national, of
France, France, states-general, Nether-
lands, states-general
Statesmen, some American, 10-2435
States' Rights, doctrine of, 8-1437-38, 8-2044
State Street, in Boston, 24-5235
State, United States Secretary of, duties,
8-1436
State-universities, occurrence of, 17-4570
Statice: see Sea-lavender
Station-games, for a train, 23-6078
Stations, in Australia, 6-1470
wireless: see Telegram, how we send a
see also Coaling-stations
Statuary Hall, the national, 7-1686
Statue, from Herculeaneum, 20-face 5282
Statues, a game, 6-1603
Statues, what they are, 16-4171
Statuettes, form of sculpture, 16-4171
Staunton, George, character in "Heart of Mid-
lothian," 7-1772
Staunton, Mr., rector, in "Heart of Midlothian,"
7-1772
Stavanger, town of, 14-3662
Stavanger Fiord, in Norway, 14-3662
Stays, for a doll, 3-730
Steam, comes when water is hot, 6-1538
lack of color in, 6-2260
moves engines, 3-304-05, 10-2540
power of, 1-79, 3-400, 6-1583 20-5293
puts out light, 14-3778
raised by sun, 12-4148
Steamboats, first, 5-1116, 10-2486, 2488
invention of, 11-2712
Steam-dome, of engine, 2-305
Steam-engine, view of a, 2-416
wrongly named, 6-1688
see also Locomotive
Steam-shovel, at work, 21-5594-95
for ore, 22-5691
Steam-squirt, fire-engine, 22-5757
Steam-trawlers, work of 18-3817 48
Steamers, and telegraph, 17-4445
Stedman, Edmund Clarence, poems: see Poetry
Index
Steel, age of, 5-1316
and magnetism, 3-2167, 20-5356, 21-5527
elastic, 10-5019
fatigue of, 15-4022
for cutlery, 18-4802
for fire-making, 3-811
for pens, 13-3184
for reinforced concrete, 16-4242
in buildings, 3-612
in Germany, 11-2766
in ocean cables, 12-4698
in the United States, 10-2684
manufacture of, 5-1316 7-1827-88 21-5544,
22-5687-88
minerals for hardening 22-6092
strength of, 5-1192, 14-4685
Steele, Major, and riot at Golden, 18-4624
Steele, Richard, English writer, 18-4723-25
Steepchase, a game, 3-735
Steerforth, James, character in "David Copper-
field," 11-2862
Stoke, William, and "John Brown's Body,"
12-3053
Stegomyia, a genus of mosquitoes, 12-4201-02,
2238-37
Stegosauras, 1-50
Steinhilf (Earl A.), and electric current,
17-4448
Steinway, Henry, piano of, 5-1088
Stein, a star, 10-2539
"Stein," sweetheart of Swift, 7-1748
Steins, of grass, 6-1340
Stepped-plate, making a, 16-4295
Stenall, painting with, 1-107
Stephen, King of England, incidents of reign,
5-592, 12-3123-34
Stephen I, St., patron saint of Hungary,
11-2597-98, 21-5652
statue of, 21-5650
Stephens, Alexander M., as vice-president of the
Confederacy, 8-2044
Stephenson, George, and railway gauge, 10-2475
engine-builder, 3-599, 601, 603, 8-1120
Stephenson, Robert, a miner, 3-600
Stephenson, Robert, bridge-builder, 1-33, 33
Steppe, of Asia, 12-3928
of Russia, 12-3928, 2604
treeless plains, 12-3129
Steps, of Powis Castle, 21-5630
Stereoscope, meaning of, 11-2728
optical instrument, 12-3476, 2795
views in, 10-3476
Sterne, Laurence, English author, 17-474, 2795
Sterope, a Pleiade, 12-3373
Stettin, German city, 12-3714, 3728
Stevens, Alfred, English artist, 17-474
Stevenson, Elizabeth Catherine, see Mrs. Stevenson
Mrs
Stevenson, Robert Louis, and Henry, 17-474
British author, 8-2221, 2229
poems: see Poetry Index
portrait, by St. Gaudens, 12-1056, 4472
writings of, 14-3831
Steward, Robert, M.D., 12-3123
Stewart, Alec, and the witches, 3-735
Stewart, Charles, American naval officer, 12-3440
Stewart Islands, part of New Zealand, 12-3440,
3446, 3450, 3452
Stewarts: see Stuarts
Stick, apparent bending of, 22-5371
balanced, 22-5737
breaking faggot of sticks, 6-1192
bundle of sticks, 12-3096
floating of, 3-694
heat does not run along, 4-1085
noise of swinging, 19-4879
telling time by shadow of, 6-1541, 6-2261
two ways of splicing, 10-4202
see also Hockey, and other games, Morris-
dances
Stick-caterpillars, 12-3449, 3453
Stickkerchief, game, 14-3549
Stick-insects, mimicry of, 12-3194, 12-3445,
3446 3460, 3152
Stickleback, a fish, 10-2699, 2707, 2709
Stiffstep, king of Stumpinghame, 15-4049
Stiggins, Rev. Mr., character in "Pickwick
Papers," 10-2469
Stigmas, of flowers, 5-1340
see also Pistol
Stikine River, in Canada, 22-5780
Stillingfleet, church of St Helena at, 20-5384
"Still waters run deep," proverb, 6-1590
Stilt, a bird, 3-1978-79, 3-2241
Stilts, making and using, 19-4927
used by herdsmen, 3-2434
Stimulants, tea and coffee are, 12-3414
Sting, of bee, 3-816 15-4020
of jelly-fish, 6-2411
of nettle, 3-816 17-4356
treatment for, 13-3440
value of, 14-3665
Sting-bull, a fish, 10-2609-10
Stinging-nettles, plants, 17-4354
Stinkhorn, a fungus, 19-face 4680
Stinking-Bob: see Herb Robert
Stirling, battle of, 1-128
history, 3-770 12-3138
Wallace monument at 10-5047
Stirrup, bone of the ear 15-3912, 4916
Stitch, filling-in, 23-6008
in the side 10-2654
padding, 23-6008
whipping 21-5446
see also Crochet-work, Needlework, Work-
basket etc
Stitchwort, a plant 10-4125
Stout, life-history 1-180
Stock, a plant 10-4134, 20-5233 34
Stock-dove, bird, 9-2218
Stock Exchange, of New York, 10-5010
Stock-farms, in Canada, 5-1278
Stockholm, capital of Sweden, 14-3655, 3660
Stockings, presented to Elizabeth, 4-1042
removing 15-2964
story of Christmas, 9-2180
Stocks, flowers, 20-5228
Stock-yards, of Chicago, 10-2679
Stockard, Richard Henry, poems: see Poetry
Index
Stoke-hale, of a ship, 22-6210
Stoke Poges, churchyard of, 8-2021
Stokers, hard labor of, 1-80
Stomach, and body, 22-5902
and starch, 3-2172
of camel, 3-406
of cow, 3-406
of fishes, 10-2482
see of, 3-3863
when empty, 3-2248
Stomach-ache, cause of, 3-2248
Stomata, lungs of the leaf, 1-144
Stomoxys, biting fly, 12-4201
Stone, Frank, picture by, 22-4027

GENERAL INDEX

- Stone**, Aztec, sculptured, 1-19
 black, of Mecca, 12-3029; 15-3858
 dedicated stones in Washington Monument, 7-1892
 does not burn, 4-917
 effect when thrown into water, 4-1081
 for building, 10-2680; 20-5849
 for cooking, 1-17
 for heating water, 10-2578
 for Indian messages, 8-2268
 for spoons, 18-4805
 how made, 4-917
 in coronation chair, 3-770; 4-1035
 in the air, 17-4587
 in the road, 24-6283
 knights and the wonderful, 11-2759
 lie of, 19-4873
 makes spark when striking steel, 4-1085
 motion in a sling, 14-3676
 philosophers', 8-1960
 plants that resemble stones, 18-3893
 precious stones, 24-6377
 speed of sling, 3-813
 that gathered no moss, 23-6025
 used in fire-making, 3-810
 utensils and weapons of, 10-2576-78
 why does it sink? 3-695
 writing on, 13-3478, 3484
 see also Boundary-stones, Cement, Rocking-stones, Rosetta stone
Stone, of fruit, 8-2083; 16-4134; 17-4376
Stone, Age of, a period, 3-612; 5-1816
Stonechick, a bird, 8-2107, 2110
 egg of, 7-face 1760
Stone-crop family, 17-4349
Stone-crops, plants, 5-1098; 15-4013 17-4351; 20-6229
 see also Sedum
Stonehenge, and the sun, 8-1959
 monument of, 8-3067; 16-4112; 19-5039
Stone, St. Stephen's, see Hildstone
Stonewall Jackson, see Jackson, T. J.
Stool, of Egyptians, 18-4847
 portable, 11-2875
Stool-ball, a game, 15-4043
Stopper, removing glass, 21-5617
Stops, amusement with, 22-5743
 that cost money, 22-5743
Storage-rooms, on ship-board, 1-82
Storax, a gum, 20-5340
Storer, Mary, portrait, by Copley, 16-4217
Stores, air in, 7-1804
Stories, Book of; see Tables of Contents
Stork, and the frogs, 8-503
 farmer and the, 11-2968
 nest of, 22-5750
 various kinds of, 8-1973, 1975-77
Story, Justice Joseph, of the Supreme Court, 18-4668
Story, Julian, American artist, 18-4666
Story, William W., American sculptor, 18-4666
Story, Indian stories, 11-2782
 oldest, 1-73
 stories carried from country to country, 15-3936
 that had no end, 16-4281
Story-Dictionary, in English and French, 22-6011, 6169
Story-hours, in New York libraries, 12-3224
"Story of a Bad Boy", by Aldrich, 6-1621
"Story of a Stone Wall", by Keller, 3-2103
"Story of Avis", by Phelps, 3-2100
Story-tellers, the great, 7-1745
Stoughton, Matilda, portrait, by Stuart, 16-4317
Stourbridge Lion, the, an engine, 3-605
Stowe, Harriet Beecher, American writer, 8-1609, 1617; 8-2043, 2095-97
 poems; see Poetry Index
Stubb, geographer, comment on Gaul, 8-2415
Sturges (E. Westworth), Mari of, and Charles I., 1868, 1869, 1865
 strains, treatment of, 13-3440
Strand, street in London, 8-1356
Stranger, character in "Cricket on the Hearth," 8-2362
Strapparo, Giovanni Francesco, Italian author, 8-1477
Strasbourg, city of Alsace-Lorraine, 10-2559; 11-3778; 14-3610
Strata, layers of rock, 20-5849
Stratford-on-Avon, players at, 21-5550
Stratton, Lord, Canadian philanthropist, 16-4333; 16-4335
Stratton, in Canada, 21-5513
Stratton's Park, on Vancouver Island, 22-5780
Stratus, clouds, 14-3652
Straus, Oscar L., American diplomat, 24-6337-38
Strauss, Michael, composer, 13-3294
Straw, for paper, 4-943
 Indian of, 16-6124
 sucking through a, 15-3953
 tricks with straws, 1-106
Strawberries, cultivation of, 14-3244, 3786; 15-3968
 flower and fruit of strawberries, 16-4134
 ruined by mice, 3-806
 water in, 5-1193
 where grown, 3-651
Strawberry-tree, a shrub, 16-4136
Streaks, on petals, 16-4135
Streams, flow of, 6-1690; 16-4278
 flowers of, 19-4947
 measuring, 23-6083
 picture of stream, 3-430
 power utilized, 10-2682
Streets, city of crowded, 9-2362
 what is wrong with street? 19-4816
Stretail, Guard-regiment, 14-3725
Stretch, rude to, 3-815
 what makes us? 3-814
Stretchers, for first-aid, 13-3963-64
Strike; see Baseball
Strike-pen, in sugar-making, 3-708
Strikes, by employees, 12-4128
 Chicago railway, 8-2375
Strindberg, August, Swedish writer, 20-5315
Strings, of musical instruments, 8-517;
 8-1087-88, 1091-92; 7-1791; 10-2652; 15-4001
 tricks with, 1-109-10; 6-1696; 17-4499; 23-6923
 vibration of, 19-5057
Stripes, on United States flag, 7-1658;
 21-6493-94
Strokes, of swimming, 15-3898
Strong, Dr., character in "David Copperfield," 11-2867
Strongarm, in story, 17-4414
Strongbow; see Clare, Richard
Strongwood, Indian tribe, 23-6144
Structure, importance of, 8-1182
Strutt, Hon. M. J., and radium, 3-646, 648
Stychnine, a poison, 17-4484
Stuart, character in "Round the World," 18-4910
Stuart, Charles; see Charles I, and II, of England
Stuart, Charles Edward, the Young Pretender, 4-1002, 1048; 6-1494, 1497-1500
Stuart, Charles James, 19-5037, 5133
Stuart, Gilbert, American artist, 7-1691;
 16-4216-17
Stuart, James, character in "Henry Esmond," 12-3312
Stuart, James; see James I, king of England
Stuart, James Francis, the Old Pretender, 4-1043
Stuart, John McDouall, explored Australia, 8-366, 367
Stuart, Mary; see Mary, Queen of Scots
Stuart, Ruth McNairy, American writer, 8-2103
Stuarts, origin of name, 12-3138
 royal family of England, 4-862; 8-1113;
 14-3547
 times of the, 4-1035
Student, in "Canterbury Tales," 15-3939
 sleepy, 21-5478
Studio, for moving pictures, 20-5139-39, 5141
Study, a painting, 7-1683
 of Jack's house; see Jack, house of
Stumpie, Mams, a cobbler, 3-725
Stumpingshame, in story, 16-4049
Sturgeon, William, and electro-magnet, 17-4446
Sturgeon, royal fish, 19-3961, 3963
Sturgeon Lake, in Canada, 1-328
Sturges, William, electro-magnet of, 8-2160
Sturt, Captain Charles, explored Australia, 8-366, 367
Stuyvesant, Peter, Dutch governor of New Amsterdam, 8-527, 529
Style; see Pistol
Stylets, of insects, 12-3205
Stylets, for writing, 13-3484; 19-4060
 of talking-machine, 21-5401
Stymphalia, Lake, birds of, 20-5165
Styria, and Austria, 11-2396
Styx, river, 5-1363
Subject, and object, 8-2327
Submarine, and destroyers, 20-5204
 and its opponents, 20-5208
 caricature of Fulton, 19-3439
 construction of, 20-5223-24

GENERAL INDEX

- Submarine, equilibrium of, 18-3886
in Canal, 21-5600
in "Twenty Thousand Leagues," 12-4051
naval, 22-6204
raising the F 4, 24-6312
submerged, 2-2036
working of a, 22-5857
see also Toy-submarine
- Submarine-chaser, a boat, 22-5290, 22-6204, 22-6205
Submarine-warfare, effect on United States, 12-3495
- Subtraction, of numbers, 2-3235, 12-3331
Sub-Treasury, in New York, 2-1292, 12-5016
Suckers, and air-pressure, 12-3983
how to make leather, 2-340
of blimbing pines, 1-169
cf. hinds, 2-1211, 1219
cf. marine animals, 2-2412, 12-2484
of roses, 2-1249
on dies, feet, 4-916
- Sucking, nerves that control, 14-3599
Sucking-babes, habits of, 12-2607
Sucre, General, general of Bolivar, 17-4514
Sucrose, common sugar, 2-702-04
Sudan, history of, 2-2426, 12-4204, 4300 07
Sudbury District, mines in, 22-6120
Suevic, ship, 2-1414
Suez Canal, history, 1-24 12-4293, 4304 21-5592
Suez, Isthmus of, importance, 12-4297, 4302, 12-4957, 4962
- Suffocation, treatment for, 12-5126
Suffolk, Duke of, and Mother Shipton, 2-2065
Suffolk, county of, England, 2-465
Suffolk-French, a horse, 22-6068
Suffrage, in Canada, 2-1454
in Denmark, 14-3658
in Hungary, 11-2906
- Sugar, and the Knickerbockers, 22-5834
as food, 2-1591, 2-2080, 11-2730
as fuel, 12-2654, 12-4110
capillarity of, 12-4877
character in 'Blue Bird,' 22-5836
decomposition of, 7-1890 12-3223
digestion of, 2-2365
dissolving, 21-5640
energy of, 14-3592
fermentation of, 22-5991
from East Indies, 14-3548
from maple, 2-703-04, 12-2499, 2501-03, 11-2877
in Egypt, 12-4306
in Fiji, 2-1492
in Guatemala, 17-4405
in Halifax, 21-5544
in Louisiana, 22-5960
in milk, 2-914, 11-2827
in Queensland, 2-1872
in West Indies, 22-6045-48
kinds of, 2-704
production of, 2-2151, 2156, 2160 2-2386
red and brown color of, 12-3386-87
source of, 2-702, 703
sweetness of, 12-4272
yields alcohol, 4-909, 7-1890
- Sugar-beet, picture of, 2-face 702
production of, 2-703-04, 708, 2-2423
Sugar-bush, tapping the, 12-2502
Sugar-cane, and Arabs, 22-6102
production of, 2-703-04, 707
various kinds of, 2-face 702
- Sugar-pine, of the West, 21-5430, 5433
Suggestion, power of, 20-5191
what it is, 12-3909
- Suleiman the Magnificent, sultan of Turkey, 12-3186, 3193
- Sulphur Mountains, in Asia, 12-3924
Sulla (Lucius C.), Roman general, 2-449, 20-5278
Sullivan, Anne, and Helen Keller, 12-3124
Sullivan, Sir Arthur (W.), English composer, 2-2014, 2016, 22-3293
- Sully, Thomas, American painter, 12-4218
Sulphates, salts of sulphuric acid, 7-1814
Sulphur, compounds of, 2-1586, 7-1814
electricity and, 2-2162
for matches, 2-2423
for plants, 12-3788
for succulents, 11-3255, 2259
in gunpowder, 2-2344
in Mexico, 17-4401
in Philippines, 2-2152
in rubber-process, 11-3710; 12-3276; 22-5794, 5796, 5795-79
- in sugar-refining, 2-704, 703
non-metallic element, 2-706, 811; 2-1127, 1214, 1217
- Sulphur, pollen mistake, 22, 12-3022
production of, 12-3882
tarnishes silver, 7-1760
- Sulphure, Butcher's, 2-1586
Sulphur-worm, a plant, 12-3788
Sulplolans, in Canada, 22-5990
Sultan, and Baillat, 2-2174
ruler of Turkey, 12-3186
sends hangings to, 2-2174
who found an honest man, 2-2174
- Sumac, a tree, 17-4622, 21-4422
Sumac-berries, food of birds, 12-3788
Sumatra, monkeys of, 12-3788
Summer, land off see Summer, land of
Sumerian, a language, 12-4204-08
Sumerians, writing of, 12-3420
Summer, and the Dog-star, 12-3279
cause of, 2-422
sleep of animals, 22-3576
stars in, 12-2641
warmth of, 12-3044
white clothing for, 17-4272
- Summer-chaffer, injurious insect, 12-3202
Summer-Garden, in Petrograd, 12-3500
Summer-house, making a, 12-4613
Summersox, Esther, character in "Black House," 12-2460
- Sun, problem concerning, 4-250
Sunset, Thomas, during Revolution, 2-1009
Sun, and his family, 1-141 2-between 424-426, 2-1962
- and river's energy, 12-5026
and the wind, 12-3879
as a god, 12-4842, 4846
black spot after looking at, 1-48
brightness at noon, 12-3679
browns skin, 12-2778
cannot set fire, 12-3679
cooling of the, 2-1412, 12-4116
distance from, 22-5891
early knowledge of, 2-1959
eclipses of, 7-1880-81, 1882, 2-2081, 2-3211, 12-3654
effect on climate, 12-3223
effect on earth-tides, 2-2395
elements of, 12-5025
fades carpets, 17-4586
file of, 17-4481
heat of, 4-1084, 2-1412, 1416, 2-2297, 17-4239, 4481, 20-5168
helium in, 2-1319
in early astronomy, 7-1676, 1680
Indian legend of, 12-3272
makes tides in the air, 1-43
motion of, 17-4482 22-5813
name of, 2-3249
puts out fire, moon etc. 2-1418 12-3680-81
radiant waves from, 12-1230
rays of, 12-3044, 2146, 2228
rising and setting of, 2-687
shining of, 17-4587, 4875
size of, 2-565, 22-5872
solar system, 1-142, 144, 2-321, 2-1689, 7-1676 2-1962, 2-2293; 12-2541, 12-4292, 12-4817, 22-5892
source of oxygen in, 12-3507
spectrum of the, 11-face 2736, 2711
steam raised by, 12-3148
story of, 1-6, 86 141, 2-322
tides on, 1-41 2-2294
time told by, 2-2261
water in the, 12-3288
what keeps it alight? 2-292
wonder of, 2-2087
worship of, 1-18, 4-910, 17-4506, 20-5146
see also Midnight-sun
- Sun-birds, various, 7-1760
Sun-dance, Indian religious rite, 12-2579
Sunday, name of, 1-91
see also Sabbath
- Sundew, insectivorous plant, 12-3566-67, 12-5094-95
Sun-dial, for telling time, 2-1542, 2-2461
Sundus, kinds of, 12-2701, 2707
Sundus, a plant, 1-15, 2-616; 12-4016, 12-4136; 12-5092
state flower, 22-5815
Sun-God, and Hercules, 20-5186
of Asia, 12-4268, 4269
Sunlight, and plants, 12-4815
can we store? 2-1255
necessary for health, 4-908
obscured, 2-1582, 12-4221
of darkened sun, 2-1825

GENERAL INDEX

- Sunlight, pressure of, 10-2542
 seeing, 14-3675
 spectrum of, 7-1877
 Sunnyside, home of Irving, 6-1611
 Sun, in the Milky Way, 7-1831
 Sunset, as weather-gauge, 8-2034
 colors, of, 8-392
 Sunset-Land, 4-1051
 Sunshine, and the martyr, 19-5094
 causes freckles, 18-4020
 energy of, 14-3592
 Sunshine Cottage, home of Miss Brigham, 8-2035
 Sunspots, and spinning of sun, 22-5513
 cause of, 12-3232, 20-5356, 23-5995
 effect of, 10-5294
 study of, 8-2089
 Sunstroke, and the neck, 10-2463
 treatment for, 19-5033
 Super-heater, in machinery, etc., 2-305, 418
 Superior Lake, in North America, 1-14, 228;
 20-5350, 22-5688, 23-6120
 Superstitions, survival of, 8-2424
 Supply-ships, naval, 23-6204-05
 Supreme Court, of the United States, 6-1437,
 7-1686
 Surajah Dowlah, nawab of Bengal, 7-1718
 Surat, English factory at, 7-1718
 Surface, and walking, 14-3684
 Surface-tension, what it is, 7-1795
 Surgeons, paid by Isabella, 10-2445
 "Surgeon's Daughter," story of, 6-1407
 Surgery, ancient, 18-4626
 Surinam, see Dutch Guiana
 "Early Tim's Troubles," by Burnett, 2-2100
 Surprise-egg! see Easter-eggs
 Surry, Earl of, writings of, 21-5484
 Surveying, science of, 23-6082
 Surveys, magnetic, 4-867
 Susa, capital of Elamites, 20-5148
 Susan Constant, ship, 2-622
 Suspension-bridge, rods supporting, 14-3685
 see also Bridges, building of
 Susquehanna River, bridge over, 1-33
 Sussex, English county, 2-465
 Sutta, custom of, 6-1636
 in "Round the World," 19-4912
 Suvorov, Russian general, 14-3728
 Svend, Earl, in story, 2-357
 Sverdrup, explorer, 21-5457
 Sverre, king of Norway, 14-3662
 Swallowing, effect on ear, 13-3916
 nerves that control, 14-3599
 process of, 7-1650, 8-2174
 Swallows, birds, 9-2213, 2215-16; 13-3461;
 21-5664
 egg of, 7-face 1756, 1760
 home of, 22-5752, 24-6290
 see also Barn-swallows
 Swallow-tail, a butterfly, 12-3011, 3020
 Swallow-wort, see Celandine
 "Swamp Fox," see Marion, Francis
 Swamp-rose-mallow, a plant, 19-5092
 Swamp-sparrows, birds, 13-3460
 Swan, Joseph Wilson, 3-668
 Swan, a constellation, 10-2641
 Swan, a bird, 6-1376, 1557, 1565-66, 9-2350
 in "Ugly Duckling," 7-1706
 quills for pens, 12-3482
 Swan-knight, see "Lohengrin"
 Swan of Germany, see Walther von der
 Vogelweide
 Swan, in story, 22-6017, 24-6287, 6340
 Swarm, of bees, 11-2851, 2856
 Swarthmore College, name of, 22-5937
 Swarthmore Hall, and Margaret Fell, 22-5935
 Swartwout, Captain Abraham, and flag, 21-5493
 Sweat, centre of, 8-1924
 movement of, 19-4117
 poisonous, 8-515
 use of, 8-1923
 Sweat-glands, in the skin, 8-1923, 16-4117
 Sweden, and Finland, 14-3726
 and the Baltic, 14-3724
 costumes of, 16-3435
 during Seven Years' War, 17-4555
 history of, 16-3435; 10-2559, 16-3651-52
 in the New World, 8-282, 4-893
 map of, 21-5663
 see also Thirty Years' War
 Sweden, and Denmark, 14-3772
 in America, 8-529, 531
 in Canada, 1-230, 22-5946
 name of, 14-3652
 Sweden, in the pancreas, 9-3366
 Sweden-gale, see Hog-myrtle
 Sweet-gum, a tree: see Liquidambar
 Sweet-majoram, a plant, 17-4353, 4355
 Sweetmeats, colonial, 4-966
 Sweet-pea, a plant, 4-931; 6-1519; 20-5237, 5232
 Sweet-pepper-bush, see Clostris
 Sweet-potatoes, a food, 8-2154
 Marion's, 4-1008
 production of, 8-2386
 Sweets, at home, 14-3553
 Sweetwater Dam, in California, 21-5418
 Sweetwilliam, a flower, 8-732, 7-1788, 13-3325,
 18-4185; 20-5228, 5233
 Sweyn, king of Denmark, 14-3654
 Swieten, Ghysbrecht van, character in
 "Cloister and the Hearth," 18-4070
 Swift, Jonathan, English author, 8-1333, 7-1715,
 1747
 Swift, a lizard, 8-1211
 Swifts, birds, 8-2215-16
 Swim, of Sir Cloudeley Shovel, 16-4090
 Swim-bladder, of fish, 18-4000
 Swimming, and specific gravity, 18-3829
 easier in salt water, 8-2011
 how to learn, 18-3897
 reason for, 14-3568
 teaching, 8-1161
 tricks of, 8-1362, 11-2726
 under water, 7-1653
 Swinburne, Algernon C., English poet, 23-6040
 Swiss, and watches, 6-1540
 in America, 2-531
 in Canada, 22-5946
 in North Carolina, 22-5958
 oath of the, at Ruettli, 12-2983
 troops in France, 9-2280
 Swiss Guards, defence of Tulleries, 7-1820,
 8-2284, 16-4108, 22-5848
 Switch, of electric light, 14-3678
 Switch-back, a toy railway, 14-3638
 Switchmen, work of, 2-312
 Switzerland, animals of, 2-610
 family tour in, 22-5841
 flag of, 12-2992
 history of, 1-130, 10-2559, 14-3548
 ice and snow in, 10-2528, 2531, 13-3250
 lake-dwellings of, 12-2984
 legendary history of, 7-1705
 maps of, 12-2991, 22-5841
 president of, 24-6261
 Roman church in, 10-2552
 traces of Napoleon in, 9-2288
 Switzerland of America: see Rocky Mountain
 of Canada
 Switveller, Richard, character in "Old Curiosity
 Shop," 11-2774
 Sword, diamond, 4-1054
 of King Arthur, 4-381-82, 885, 8-1995, 13-3372
 of Mercury, 4-1051
 of St. Stephen, 11-2896
 Spain's heroes' swords, 13-3344
 Sword-bill, a humming-bird, 7-1756
 Sword-fish, attacks whales, 4-1071-72
 Sword-lily: see Gladiolus
 Sybrandt, character in "Cloister and the
 Hearth," 18-4069
 Sycamore, Biblical, 13-3266
 European maple, 13-3265
 for whistles, 12-3902
 wood of, 20-5352
 see also Buttonwood, Plane-tree
 Sycorax, a witch, 2-329
 Sydenham, Lord, governor of Canada, 8-1272
 Sydney, Cape Breton, 21-5544, 5546
 see also Canada, railways and canals
 Sydney, capital of New South Wales, 2-365,
 6-1365, 1372, 1492
 Sydney Evening Herald, Parker and, 16-4327
 Sylvester II, pope, and crown of St. Stephen,
 21-5654
 "Sylvie and Bruno," authorship of, 6-1422
 Symbols, bone and horn pictures as, 13-3479
 what are, 6-1436
 Symbington, William, steamboat of, 10-2456-57,
 2480
 Symmetry, of body, 10-3464
 Symonds, William, and Mordock, 2-666
 Sympathy, power of, 20-5151, 22-5721
 Symphonies: see Music, composers of
 "Syndes, Ede," picture by Rembrandt, 17-4069
 Synod Buildings, 16-3802
 Syphon, principle of, 8-733
 Syracuse, Duke of, Shakespearian character,
 2-335
 Syracuse, N. Y., Erie Canal in, 12-4764
 Syr Daria River, in Asia, 15-3924

GENERAL INDEX

Syria, Sultan of, in "Canterbury Tales," 2-495
 Syria, animals in, 4-1011
 gift of, 22-5788
 glass in, 2-1262
 history, 1-127; 20-5280
 peninsula of, 12-3855, 3883
 plague in, 2-1207
 Syrians, Asiatic people, 12-4960
 Syringa, a shrub, 12-5088
 state flower, 22-5815
 Syringe, working of, 12-5983
 Syrup, saccharine, 3-708
 System, American, of Clay, 10-2438
 decimal, 2-2005
 duodecimal, 2-2005
 high-pressure for fire-fighting, 22-5758
 metric, 14-3672; 22-5723
 postal, 22-6015
 ventilating: see Jack, house of
 see also Pseudism, Nerves, Seigneurs, Sun
 Szachenyi, Count, of Hungary, 11-2905, 21-5656
 Szepes, castle of, 21-5650

T

Tabard Inn, pilgrims at, 2-492-93, 12-2938
 Tabb, John Hamilton, poems. see Poetry Index
 Tabernacle, Jewish, 24-6330
 Tabitha: see Dorcas
 Table, Knights of the Round, in "Table Round," 4-888
 made from cheesebox, 12-4707
 of spoils, 12-4880
 photography on, 12-4705
 the wishing, 7-1910
 Table-cloth, Cluny lace, 21-5525
 Table-cover, in applique work, 12-5030
 of huckaback, 12-4828
 Table Round, stories of, 12-3282, 3271
 Table-square, in ribbon-work, 2-2189
 Tablets, for writing upon, 12-3484
 inscribed, 12-4958, 4982, 4964, 4967 20-5146
 mysterious tumbling, 12-4047
 Tabris, and Constitution, 12-3861, 3864
 Tachot, Princess, character in "Egyptian Princess," 22-5951
 Tacitus, Roman historian, 2-536
 Tackler, for weaving, 12-4893
 Tackles: see Football
 Tackleton, character in "Cricket on the Hearth," 2-2302
 Taena, province of, 20-5366
 Tadoussac, settlement at, 3-555, 7-1771, 22-6124
 Tadpole, consciousness of tail, 12-4276
 young of frog, 3-672, 5-1216, 10-2472
 Taffril, Lieut., character in "Antiquary," 7-1669
 Taffy, making, 1-255 2-2145
 Taft, Lorado, American sculptor, 12-4675
 Taft, William H., administration of, 12-3488, 3495
 as governor of Philippines, 2-2152
 as president, 2-2380
 came from Ohio, 2-2382
 Tag, games of, 2-618
 Tagus River, in Iberian Peninsula, 12-3337, 3347
 Tahiti, island of, in Pacific, 2-1491
 Tail, of ant-eater, 4-1016-18
 of cocks, 22-6217
 of comet, 10-2542, 2546
 of fish, 4-1067
 of flowers, 12-3816, 12-4135; see also Spurs
 of kangaroo, 21-5664
 of lizard, 2-1218
 of man, 10-2467
 of monkey, 21-5664
 of opossum, 21-5664
 of sea-snakes, 2-1882
 of seeds, 17-4352
 of tadpole, 10-2472
 of whale, 4-1067
 see also Birds
 "Tailor," by Uhland, 12-3396
 Tailor, the minstrel, 2-589; 2-5958
 Tailor-bird, nest of, 2-3220, 22-5751
 Tainter, Charles E., and talking-machine, 21-5603
 Taj Mahal, a tomb, 2-1626-27, 7-1714
 Takamine, Doctor, and adrenal glands, 22-6014
 Takin, an animal, 22-6002
 Takon Glacier, in Alaska, 12-4059
 Takon Islet, steamer in, 12-4059
 Taku River, in Canada, 22-5780

Talavera, battle of, 12-3242; 12-4899
 Talavera, character in "Charlotte O'Malley," 12-3278
 Talbot, and pictures, 22-5751
 Talbot, Colonel, in "The Talbot," 2-2260
 Talbot, John, death of, 22-5751
 Tallegalla: see Spruce (Turkey)
 "Tale of a Tail," by Swift, 2-2260
 "Tale of Two Cities," by Dickens, 2-2260
 "Tales from Shakespeare," 2-2260
 4738
 "Tales of the Canterbury," 2-2260
 "Tales of Times and Places," 2-2260
 "Tallman," story of this novel, 2-2260
 Talk, of animals, 21-5682
 process of talking, 12-4003
 see also Speech
 Talking-machine, working and construction of, 21-5601
 Tallahassee, capital of Florida, 22-5260
 Talleyrand-Périgord, Charles M. de, and both Patterson, 12-4945
 Tallness: see Height
 Tallow-dip, a kind of candle, 4-1065
 Tally-ho, in "Tom Brown's Schooldays," 12-4238
 Talmud, sacred book of Jews, 22-5216
 stories from the, 12-4990; 20-5184
 Tamarisk, an ant-eater: see Ant-eater
 Tamarisk, a shrub, 20-5212, 5213
 Tamenund, Indian chief, 1-195
 Tamerlane: see Timur
 "Taming of the Shrew," by Shakespeare, 2-648
 Tampa, Fla., pleasure resort, 22-5260
 Tanagers, birds, 2-2345; 12-3461
 Tancred, crusader, 4-1651
 Tanganyika, Lake, in Africa, 2-302; 12-4292
 Tangent, from a circle, 14-3676
 of a clavichord, 2-1048
 Tangier, Moroccan seaport, 12-4927; 12-4928
 Tangrams, little black, 12-4184
 Tankadere, ship, in "Round the World," 12-4915
 Tankerville, Lord, owns wild cattle, 2-404
 Tanks, for oil-carrying, 12-4169
 "Tannhauser," by Wagner, 12-5298
 Tannin, in tea and coffee, 12-3414
 Tanning, process of, 11-2388
 Tansy, a plant, 4-956, 12-4126, 4212
 Tantalum, rare metal, 22-5994
 Tantramar, marsh of, 1-124
 Taoism, a religion, 12-3028
 Tapayaxin: see Toad, horned
 Tape-grass, aquatic plant, 7-1729, 1741
 Tapestry, Bayeux, 10-2544
 cartoons for, 2-762
 of Penelope, 4-980
 of Raphael, 12-5106
 Tapioca, a food, 17-4596
 Tapir, an animal, 4-1011
 and horse, 22-6063
 Tapley, Mark, character in "Martin Chuzzlewit," 10-2674
 Taproot, of sand-plants, 20-5211
 Tar, and American colonies, 4-994
 for ocean cables, 12-4693
 from gas-making, 2-416
 from Georgia, 22-5958
 from pines, 22-5430
 stains of, 21-5644
 see also Coal-tar
 Tara, Irish council at, 21-5551
 Taranaki, province of New Zealand, 2-1488
 Tarantism, an imaginary illness, 12-3262
 Tarantula, a poisonous spider, 12-3261, 3263
 Tarapaca, province of, 20-5266
 Tarascon, in "Tartarin of Tarascon," 12-4640
 Tar-baby, character in "Uncle Remus," 2-4488
 Tarentum, and Rome, 20-5274
 Taxis, Canadian, 2-1280
 in direct tax, 2-1294
 in Germany, 11-2771
 of the United States, 2-2278, 10-2438, 2440; 12-3494-95
 Tatar River, in Asia, 12-3224, 3228, 3232; 12-4118
 Tatarian, South American author, 2-1621
 Tatarian, Canadian, during Revolution, 2-597, 22-57-58
 Tazma, town in Peru, 12-4611
 Tazma, a plant, 11-2852
 Tazma, a fish, 22-2406, 2408
 Tazma, the Proude, legendary king of Rome, 2-428, 429; 2-1402
 Tazma, the ankle, 12-4201
 Tazma, of teeth, 2-2080
 Tartaric acid, work of, 22-5254

GENERAL INDEX

- "Tartarin of Tarascon," by Daudet, 18-4639;
20-5316
- Tartars, and Bulgaria, 12-3242
conquered China, 1-135
costumes of, 15-3931
invaded Russia, 14-3722
spread of, 15-3928
see also Mongols
- Tartarus, Mount, 7-1908
- Tashkent, capital of Turkestan, 15-3805
- "Tatt," by Cowper, 23-6031
- Tasman (Abel J.), Dutch explorer, 6-1367, 1485
- Tasmania, animals of, 4-873, 879
fruit in, 6-1374
history of, 2-362, 366, 5-1130, 6-1367-68, 1374
island of, 6-1374
- Tasmanian Devil, an animal, 4-876, 879
- Tasmanian Wolf, an animal, 4-879
- Tassel, of corn, 22-5874
of flag, 21-5491
- Tassie, and Lorraine, 19-5106
- Tasso (Torquato), Italian poet, 6-1551
- Taste, bad taste a protection, 12-3454
different tastes, 12-3320
duty of, 22-5964
law of, 12-3142
sense of, 14-3691, 15-3907, 12-4635-37
tongue organ of, 2-2173
various kinds of tastes, 2-2174
- Taste-bulbs, of the mouth, 2-2173; 12-4272
- Tate, Nahum, hymns of, 6-3018
poems: see Poetry Index
- Tate Gallery, exhibits in, 12-4174
- "Tattler," a periodical, 12-4724-25
- Taube, type of airplane, 1-176
- Tavern, *Travellers*, in New York, 6-1390
- Taxation, and Congress, 6-1435, 1438
and United States Courts, 6-1437
in United States, 13-3491
of the American colonies, 5-1114
- Taxation without representation, the slogan, 4-336
- Tax-collector, in "Canterbury Tales," 15-3929
- Taxes, direct and indirect, 6-1397
early United States, 6-1394
in Egypt, 16-4304
in England, 4-858, 858, 1043
in Europe, 16-2594
of states, 6-1391
on American colonies, 4-900, 996, 1006
on food-stuffs, 12-3183
on glass windows, 5-1264
on white phosphorus matches, 3-812
skins or produce for, 7-1834
- Tay-Bridge, 1-24, 2-310
- Taycote, a Pleiade, 12-3374
- Taylor, a golf champion, 12-3214
- Taylor, Bayard, poems see Poetry Index
- Taylor, Benjamin Franklin, poems see Poetry Index
- Taylor, Jane, poems see Poetry Index
- Taylor, Jeffreys, poems see Poetry Index
- Taylor, John, and cats, 23-6052
- Taylor, Howland, martyrdom of, 19-5094
- Taylor, General Zachary, as president, 8-2043, 8-2332, 12-4488, 3452
from Louisiana, 9-2332
in Mexican War, 7-1842, 1844-45
- Tea, as a drink, 13-3406
how to prepare, 12-3327
in New Guinea, 6-1492
in North Carolina, 23-5975
not a food, 12-3183
story of, 22-5970-71
tax on, 4-396, 998
water for, 14-3685, 3780, 17-4585
why does it rise, 1-170
see also Labrador-tea, New Jersey tea, etc.
- Teach, Edward, a pirate, 2-522
see also Blackbeard
- Tea-cloth, afternoon, 21-5445
drawn-thread work, 2-2367
- Tea-cosy, use of, 2-692
- Teal, a duck, 6-1584
- Tea-party, fancy-dress, 20-5247
in "Alice in Wonderland," 12-2036
- Tea-room, on shipboard, 1-32
- Tears, glands and ducts for, 12-4263-64
going and coming, 2-396
use of, 12-3455
why they are salt, 2-316
- Tea-rooms, a plant, 12-5077
- Teacup, ear-cups of, 12-3586
- Teahiti, Indian chief, 2-759; 7-1233, 11-2784
- Tea-hay, 11-2714
- Tea, of golf, 12-3211
- Teasing-ground, in golf, 12-3211
- Teeth, and nitrous oxide, 12-4682
and sugar-cane, 12-3416
cause of headache, 22-5735
chattering of, 17-4483
decaying, 12-3180
growth and use of, 2-2077
held by jaws, 10-2572
not alive outside, 5-1195
of beaver, 2-678
of birds, 2-801
of crocodiles, 2-1221
of fishes, 10-2477-78, 2610
of flowers and fruits, 12-4125
of frog, 2-1216
of gorillas, 12-3272
of hippopotamus, 4-1014
of horse, 12-3097, 22-6061
of snakes, 6-1220, 1237
of sphenodon, 2-1210
of whales, 4-1068-69
outgrowths of skin, 2-1982
work of, 22-5904
- Tehran, capital of Persia, 15-3859, 3862-63
- Tehuantepec, Isthmus of, 17-4297, 4405
- Tehuacanes, Indian tribe, 17-4506
- Tejeda, Sebastian L. de, Mexican president, 17-4404
- Telegram, how we send it, 14-3575
problems concerning, 2-491; 2-736
- Telegrams, a game, 10-2551
- Telegraph, development of, 2-2169, 11-2713, 24-6351
in desert, 6-1272
in London, 14-3579
in New Zealand, 6-1490
in South Australia, 6-1372
invention of, 12-3491
medium used in, 22-5875
makers of, 17-4441
- Telegraph-cable, see Cable
- Telegraph-clerk, at Delhi, 12-4799
- Telegraph-lines, why do they hum? 7-1886
- Telegraph-office, in London, 14-3579
- Telegraph-wires, sagging of, 12-3145
- Telegraphy, early, 2-1118
wireless, invention of, 5-1119, 6-1449-50, 14-3573, 3584-86, 17-4445, 20-5355
see also Telegram, how we send a
- Tel-el-Amarna, tablets, 12-4364, 4970
- Telemachus, a hermit, 3-635
- Telemachus, son of Ulysses, 1-74
- Telephone, and Edison, 24-6351
development of, 11-2717
for divers, 24-6312-14
in New Zealand, 6-1490
makers of, 17-4411, 4446
making a, 1-247
that a boy can make, 19-5122
waves of ether in, 12-4230
wonder of, 2-339
see also Jack, house of
- Telephony, wireless, 20-5355, 21-5542
- Telescope, and Galileo, 7-1580; 2-1952, 1967
astronomical, 6-1967, 1969, 2-2264
making a simple, 14-3785
meaning of, 11-2738
power of, 7-1790
- Telford, Thomas, planned Gota Canal, 14-4460
- Tell, William, Swiss legendary patriot, 1-130, 7-1703, 12-2983, 2988
- Tellramund, Frederick, Count of, character in "Lohengrin," 21-5561
- "Temperance," see Elizabeth, Queen, Guyon, Sir
- Temperance, fresco of, 7-1536
- Temperance, House of, in "Fairy Queens," 3-700
- Temperature, and gravitation, 14-3589, 3780
and heat, 17-4501
and pulse, 15-4018, 17-4576
contracts or expands matter, 15-4024
effects of, 17-4394
measuring, 14-3673
normal, 2-1938
of animals, 2-571
of body, 4-873; 12-4116
of hot days, 12-3686
of iron, 12-1938
real scale of, 12-4083
sense of, 2-1954
thermometer for highest and lowest, 17-4395
what it is, 2-812
see also Moon, Things, hot and cold

GENERAL INDEX

"Tempest," by Shakespeare, 2-329; 21-5522
 Temple, prison called, 12-4104
 Temple-bar, heads on, 12-4424
 in London, 2-1115
 Temple Gardens, in London, 2-775
 Temples, Buddhist, 22-5195
 buried in sand, 12-4115
 in India, 2-1036
 Jain, of Calcutta, 2-2243
 Solomon's temple, 2-539; 20-5503, 5223;
 22-6330-31
 Stonehenge, a temple, 2-1960
 see also Egypt
 Tench, fish, 12-3796
 Ten Commandments, given to Moses, 22-5520
 Tendons, of the body, 12-2647
 Tenorials, island of, 4-1041
 Tennessee, admission of, V-1234; 12-2459
 and Jackson, 2-784
 capitol of, 22-5969
 description of, 22-5962
 during Civil War, 2-2050
 early history, 4-958
 flower of, 22-5816
 Indians of, 1-31
 maize in, 22-5349
 presidents from, 2-2282
 secession of, 2-2044; 2046; 12-3492, 22-5957
 Tenniel (Sir John), his cartoon "Dropping
 the Pilot," 11-3771
 Tennis, taught children, 12-3223
 Tennis-ball, bounce of, 12-5020
 imitates moon, 12-4704
 Tennis-court, making, 17-4379
 oath in the, 12-4106
 Tennyson, Alfred, Lord, anagram from name of,
 12-5037, 5133
 and nature, 2-2237
 English poet, 4-923, 1055, 22-6036
 poems, 4-1056, 21-5411, see also Poetry Index
 portrait bust of, 12-4672
 sayings of, 14-3777, 17-4584
 Tennyson, Charles, English poet, 22-6036
 Tennyson, Lord, son of poet, 22-6037
 Tennyson-Turner, C., poem, see Poetry Index
 Teococitlani, see Mexico, City of
 Tenons, in wood-joints, 2-1520
 Tens, why we count in, 2-2005
 Tenses, of verbs, 12-3375
 Tensor Tympani, of the ear, 12-3316
 Tentacles, of angler-fish, 12-3502-09
 of sea-animals, 2-1420-21, 2-2404 2412
 Tents, angry scene in tent, 12-2522
 for hospital, 12-2445
 girls putting up, 12-3753
 of Arabs, 22-6092-99, 6104
 of Indians, 1-16-17
 Tepees, Indian tents, 12-2577
 Teredo, destructive sea-animal, 10-2615-16
 Teresa, character in "Cloister and the Hearth,"
 12-4073
 Tergon, in "Cloister and the Hearth," 12-4069
 Terhune, Albert P., an editor, 2-2095
 Terhune, Rev. E. W., husband of Marion Har-
 land, 2-2098
 Terhune, Mary W. H., American writer, 2-2098
 Term, length of presidential, 2-1396
 Termites, destructive ants, 4-1018 11-2972-74
 Tern, egg of, 7-face 1756
 sea-fowl, 7-1642-44, 1762, 1796, 2-2240
 see also Noddy
 Terra-cotta, Robbia's figures in, 11-2797
 Terra Nova, ship, 21-5486
 Terriers, various, 22-6324
 Territories, of United States, 2-1425, 2-2147
 Territory, the most Northern, 12-4057
 Terror, Gray, 24-6257, 6340
 horse named, 17-4523
 see also Reign of Terror
 Terror, ship, 21-5459, 5464
 Terror, woman, in antarctic, 21-5464
 Terry, Will, made clocks, 2-1640
 Testament, Old, translation of, 12-4353
 Testimony, in United States, 4-1624
 Test-tubes, use of, 4-1038
 Tetanus, effect on jaw, 17-4423
 Tete Jaune, mountain pass, 22-5775
 Tetrahedron, a fossil, 12-3697
 Tetra, bridge, in balloon, 22-5710
 Tetrahelms, in Switzerland, 22-5247
 Teuchman, king of Hamitic, 12-4922
 Theban, God Danubius, 11-3886
 and Roma, 22-5278
 Tewfik, Khedive of Egypt, 12-4204

GENERAL INDEX

- Things, a likeness of, 20-5386
attraction of floating, 18-3911
dark warmer than light, 12-3387
effect of temperature on, 12-4024
ending of all, 20-5289
fading of, 12-3227
floating of light, 12-3150
food of the first living, 16-4110
heard more plainly by night, 10-2536
hot and cold, 12-4083
how fastened together, 2-1259
if all born were to live, 2-2035
immediate sight of, 12-3386
in mid-air, 6-1886
in the ear, 12-3915
legends of, 2-2403, 11-2758
lifting and gravitation, 22-5814
made at dinner-table, 2-2267
makers of beautiful, 22-4171
measuring from a distance, 12-3172
moving in space, 10-2539
poetry of common, 2-1291
right way to clean, 17-4494
right way to do, 21-5647
right way to mend, 10-4294
seeing, immediately, 12-3386
seeing the smallest, 12-4680
seeing, when they happen, 22-5722
seen by reflected light, 12-3907
size and weight of, 12-3388, 12-3325
some colder than others? 2-692
speed of, 12-4112
struck by, 11-2909
that bend and break, 22-5891
that creep and crawl, 12-3355
that do not interest us, 6-1412
the most valuable, 22-5893
the strongest thing, 12-4385
thought to have been seen before, 22-5811
tiniest living, 4-317
to do in awkward situations, 12-4045
we see, drawing, 22-4181
why they move, 12-3587
yellow with age, 12-3911
- Things, Book of Familiar: see Tables of Contents
- Things to Make and Things to Do: see Tables of Contents
- "Thinker," by Rodin, 12-4174
- Thinkers, and best speakers, 22-5895
- Thimble, famous modern, 16-4164
- Thimble, game of, 21-5564
- Thirst, what makes us, 2-1289
- Thirteen, why do they say 13 is unlucky? 2-1289
- Thirteenth Amendment, to the Constitution, 2-2057
- Thirty Years' War, story of, 2-2074, 10-2558-59, 11-2904; 12-3656, 3772
- Thistle, a plant, 12-4012, 4016, 12-4132, 4136 4207
and donkey, 2-290, 10-2475
carried to Australia, 12-3889
for designing, 12-3881
in garden, 20-5239
national emblem of Scotland, 12-3136 22-5816
see also Plume-thistle, Russian-thistle, etc.
- Thistlebird: see Goldfinch
- Thistle-down, under microscope, 2-2333
- Thistlewood, Miss Helen, character in "Pendennis," 12-2515
- Thomas, Saint, one of the apostles, 2-2351 12-3726
- Thomas, Prince, of England, 2-773 12-4462
- Thomas, General (George H.), and West Point, 12-4735
during Civil War, 2-2050-51, 2053, 22-5969
- Thomas, General John, at Quebec, 2-756
- Thomas, Kempis, German writer, 12-4029, 4824
- Thomas, the Rhymer, a Scottish poet, 2-2403
- Thomas, Robert, in Limerick, 21-5559
- Thomas, David, fur-trader, 12-4831
- Thomas, George, anagram from, 12-5133
- Thomas, Sir John, premier of Canada, 2-1281
- Thomas, Peter, and enchanted cave, 2-1995
- Thomas, Robert, poet, 2-1287
- Thomas, General William, at Three Rivers, 2-756
- Thomas River, discovery of, 12-4331
- Thomas, Robert, Ernest and Boy Scouts, 12-4132
- Thomas, James, poems: see Poetry Index
song writer, 12-3765-66
- Thomson, Sir Joseph, comment on gravitation, 12-3539
type of mind, 12-4999
- Thomson, Sir William, see Kelvin, Lord
- Thong, and a lock, 24-6367
- Thor, god of thunder, 1-24, 2-466; 10-2849, 14-3662
- Thorax, of ant, 11-2970
of the body, 16-4200
see also Chest
- Thoreau, Henry D., American writer, 2-1609, 1612, 11-2535
extracts from, 12-3063
- Thornaby, church at, 20-5384
- Thornlough, death of, 21-5554
- Thorn-apple, poisonous plant, 17-4561, 4564
- Thornelike, character in "Rob Roy," 6-1623
- Thorney Island, in the Thames, 12-4681
- Thomas, for pins, 12-5001
in the finger, 12-3440
insects that resemble, 12-3447, 3453
means of climbing, 1-169
of locust, 17-4563
of trees, 20-5338
- Thorn-tree, in Irish legend, 14-3524
the enchanted, 7-1765
- Thornycroft, Wm., English artist, 10-4174, 4180
- Thoroughwort, as medicine, 4-966
see also Bonaset
- Thorpe, Rose Hartwick, poems: see Poetry Index
- Thorwaldsen (Albert E.), Danish sculptor, 7-1820, 10-4174
- Thothmes III, obelisks of, 12-4848, 19-5039
- Thought, about things that do not interest us 6-1412
and words, 6-1413
coming and going of thoughts, 2-1411
expressed by artists, 12-5079
game of what is my thought like? 22-5920
mystery of telegraphing, 1-254
of animals, 12-4892
process of thinking, 6-1412, 12-4995, 5022, 5079
reading, 2-2270, 20-5293
singleness of, 12-5021
speed of, 12-4112
stopping, 12-5022
teaching, 12-5021
what is 6-1412
- Thousand, Retreat of the Ten: see Retreat of the Ten Thousand
- Thousand Island Park, pleasure resort, 23-6123
- Thousand Isles, in the St. Lawrence, 23-6121-22
- Thrace, king of see Diomedes
- Thrace, history of, 12-3247, 20-5150
- Thrashers, birds, 2-2346, 12-3463
egg of, 7-face 1756
- Thread, drawn-work, 2-2357
making cotton, 12-4586, 4890
"Three Clerks," by Trollope, 2-2328
- "Three Golden Apples," authorship of, 2-4481
- Three-pretty-faces-under-one-hood: see Pansy
- Three Rivers, Canadian town, 2-756; 23-6124
- Three Sisters, an island, 23-6123
- Thresher, a shark, 10-3476
- Threshing-machines, for agriculture, 2-1136 12-4151
- Thrift, a plant, 2-2039, 12-4762
- Thrift, a virtue, 2-2424
- Throat, bleeding of, 12-4929
lump in the, 12-4696
- Throat-pouch, of lizard, 2-1211
- Thromorton, Elizabeth, married Raleigh, 21-5411
- Throne, ivory, of Xerxes, 20-5152
negro, of gold, 20-5210
peacock: see Peacock Throne
- Throne-room, at Persopolis, 20-5145
- Throttle, of engine, 2-305
- "Through the Looking Glass," authorship of, 2-1482
- Throwing-stick, Indian sport, 11-2782
- Thrushes, birds, 2-2109, 2112, 2-2350, 12-3463
egg of, 7-face 1756
nest of, 22-5746
see also Missel-thrush, etc
- Thrym, a giant, 1-24
- Thumb, of the hand, 12-2571, 2572
- Thumbelina, little tiny, 12-3496-97
- Thun, Countess of, and Bayn, 12-3282
- Thun, Swiss town, 12-3944, 12-5542, 5544
- Thunder, and soured milk, 12-4022
cause of, 2-812; 6-1589, 12-3329, 17-4581

GENERAL INDEX

- Thunder, land of, 14-3633
 legends of, 14-3633
 Thunder Bay, and Lake Superior, 22-4120
 thunderbolt, what it is, 12-5147
 thunderer, a fish, 22-3483
 Thundering Water! see Niagara Falls
 Thunderstorm, what to do in, 6-1943
 Thun, Lake, in Switzerland, 12-3383; 22-5343
 Thuringia, Landgrave of, and Walther, 12-3394
 Thurio, Shakespearean character, 3-640
 Thursday, name of, 1-394, 2-468
 Thyma, a plant, 12-3317, 12-4655, 4660
 see also Water-thyme
 "Thyrsis," by Arnold, 22-6039
 Tiarella; see Miterwort
 Tiberias, battle of, 6-1553
 Tiberius, emperor of Rome, 2-536
 Tiber River, in Italy, 2-485, 12-3074
 see also Rome, grandeur that was
 Tibert, Sir, the cat, 21-5569
 Tibet, a fur, 12-5073
 Tibet, and turquoise, 24-6383
 animals of, 2-295, 22-6002
 costumes of, 12-3931
 land of, 12-3923
 map of, 12-3926
 Tibia, bone of the leg, 10-2571, 12-4201
 Ticino River, in Italy, 12-2932, 3078
 Tick-birds, with community nests, 2-244
 Tickling, laughter caused by, 17-4488
 Ticks, life-history of, 12-3357, 3364
 Tick-tack, game of, 4-965
 Ticoanderoa, Champlain's battle near, 2-278
 Tides, cause of, 1-38
 effect of, 12-3388
 in the earth's crust, 12-3036
 in the St Lawrence, 22-6122
 influence on prehistoric life, 2-277
 of air, 1-43
 of early earth, 2-2211
 of fire on sun, 1-43
 of Fundy, 1-224 20-5286, 21-5547
 red-hot, of earth, 2-325
 why two, 12-4023
 wonder of time and, 2-2293
 see also Moon, Nova Scotia, Sun, etc
 Tiergarten Park, in Berlin, 11-2761
 Tierra del Fuego, Archipelago of, 17-4506
 natives of, 14-3664
 Tiffany, Louis C., glass work of, 12-4221
 Tiflis, capital of Georgia, 14-3723, 3804
 Tiger, an animal, 1-151, 153, 155, 163, 21-5662,
 22-5801, 5802, 24-6242
 and Mowgli, 21-5467
 and porcupine, 3-681
 and the traveler, 23-6133
 claws of, 3-675
 in India, 6-1631
 making stuffed cloth, 3-727
 mimicry of, 12-3448
 sabre-toothed, 1-14, 50, 155, 206, 4-1016,
 11-2919, 14-3670
 skull of, 12-3572
 men turned into tigers, 1-217
 talk of, 21-5506
 tongue of, 3-2173
 Tiger-beetle, value of, 12-3303, 3307
 Tiger-lily; see Lily, varieties of
 Tiger-moth, an insect, 12-3011
 Tight-rope, walkers on, 12-3998
 Tiglath Pileser I, king of Assyria, 12-4964
 Tiglath Pileser III, king of Assyria, 12-4965
 Tigris River, in Asia, 12-3355, 3359
 see also Assyria, Babylonia, Mesopotamia,
 etc
 Tiki Tiki, saved bears, 22-6025
 Tiltary, review at, 4-882
 Tiltury Fort, contributed to Greenwich Ob-
 servatory, 7-1633
 Tilden, Samuel J., Democratic candidate, 2-2377;
 12-3493
 Tiller, of a boat, 12-4618
 Tiltulam, Tower of, in "Old Mortality,"
 7-1776
 Tilius, an Aethiopian, 2-1231
 Tilly, Count of, European general, 10-2538
 Tilly, Sir Samuel, a Canadian, 12-4323
 Tilsley, John, made pins, 12-5002
 Tilton, Theodore, poems: see Poetry Index
 Timber, crop in United States, 2-2357
 in Australia, 6-1871-72, 1874
 in Canada, 1-283
 in Philippines, 2-2152
 in Russia, 12-3767
 sent from Norway, 14-3657, 3662
 Timber-hitch, of a rope, 12-3633
 Timberline, canyon, 12-3633
 Timby, and Marston, 12-3633
 Time, constant going on, 12-3633
 Greenwich, 12-3633
 local and standard, 12-3633
 measurement of, 12-3633
 problem concerning, 12-3633
 represented by, 12-3633
 telling, 6-1531-32, 12-3633
 unit of, 12-3633
 wonder of time and tide, 2-3633
 Time, Father, character in "Peter Pan," 12-3633
 Time-lock; see Locks, workings of
 Time-recorders, 6-1531
 Timias, character in "Peter Pan," 12-3633
 Timocharis, and the stars, 12-3633
 Timorous, character in "Peter Pan," 12-3633
 5-1123-29
 Timothy, grown for hay, 2-2354
 "Timothy's Quest," by Brown, 2-2102
 Timur, Mongol leader, 12-3363, 3364
 Tin, alloys of, 7-1858
 and the Phoenicians, 22-3200
 British trade in, 1-308
 for cutlery, 12-4804
 for mirrors, 5-1368
 from Bolivia, 12-4608
 in Alaska, 12-4983
 in Australia, 6-1272
 in bronze, 14-2646
 in Chile, 20-5366
 in Tasmania, 6-1272, 1274
 specific gravity of, 12-3228
 Tinder, for fire, 3-663
 from fungus, 12-4883
 "Tinder-box," authorship of, 2-4473
 Tinder-box, for fire, 2-4473
 magic, 12-4123
 use of, 2-311
 Tinker Bell, character in "Peter Pan," 12-3633
 Tinseltown, a page, 2-2400
 Tinto, mines of Rio, 12-3347
 Tintoretto, Italian artist, 2-1174
 Tiny Tim, character in "Christmas Carol,"
 2-2202
 Tip, a foul, see Baseball
 Tip-cat, a game, 3-725
 Tippecanoe, battle of, 12-3491
 "Tippecanoe and Tyler too," origin of, 12-3491
 Tipple, of coal-mines, 4-340
 Tiplers, pigeons, 2-2319
 Tippu Sahib, of Mysore, 17-4246
 Tire, mending a punctured, 12-4294
 of rubber, 22-5784
 Tiredness, cause of, 5-1123, 7-1279
 see also Fatigue
 Tiram, character in "Ben Hur," 22-5352
 Tissaphernes, treachery of, 12-3114
 Tissue-paper, hardened by motion, 12-5236
 Tissues, living, 12-2472
 nervous, 5-1163
 once living, as conductors of heat, 12-4238
 Tisty-tisty; see Guelder-Rose
 Tit, a bird, 22-5751
 egg of, 7-face 1760
 Titania, queen of the fairies, 2-327
 Titanic, ship, 12-3578
 Tithing-man, Colonial, 4-964
 Titian, Italian painter, 2-760-62; 2-1174-76, 1178;
 17-4591, 4594
 pictures of, 2-760; 22-5251
 Titicaca, plateau of, 12-4508
 Titicaca, Lake, in Peru, 12-4508
 Titles, and Congress, 6-1235
 Titlis Mountain, in Switzerland, 22-5343
 Titmouse, birds, 7-face 1756; 2-2313, 2326, 2346
 Titmouse; see Chickadee
 Tit-tat-tat, a game, 10-2396
 Titus, emperor of Rome, buildings of, 22-5251
 reign of, 6-1233; 22-5344
 Titus, Arch of, in Rome, 12-5041, 5042; 22-5251
 22-5343, 5344
 Titusville, founded in, 12-4164
 "Tiverton Tales," by Brown, 2-2102
 Tived, captives of, 1-19
 Toad, an amphibian, 2-1212, 1229; 2-2343;
 12-2470; 22-4374
 and the grimes, 2-2102-43
 barked, 6-1212, 1220
 killing a, 12-4167
 Old Mother, 12-4168
 stone on head of, 1-214
 value of, 12-3228

GENERAL INDEX

- Toad-flax**, a weed, 12-4204, 4210
Toad's Mouth, a rock, 2-1212
Toadstool, of paper, 12-4225
 poisoning by, 12-4225
 see also Mushroom
"To a Nightingale," by Keats, 22-4034
Tobacco, early planting of, 1-16, 4-994; 21-5410
 early trade in, 2-524
 effects of, 12-4279; 22-6108
 from Dutch East India, 14-3548
 habit of, 20-5291
 in Brazil, 20-5291
 in Oceania, 2-1492
 in Porto Rico, 2-2156
 in West Indies, 22-6042, 6046-47
 not a food, 12-3123
 oils in, 2-512
 poisonous plant, 1-15, 12-3412, 12-3212
 production of, 2-2356, 10-2686
 substitute for, 20-5219
 white, 12-4014
Tobacco-blindness, smoking causes, 12-3417
Tobacco-heart, cause of, 12-3417, 22-6108
Tobacco-worm: see Cotton-boll worm
Tobago, West Indian island, 22-6048
Toboggan, Indian sled, 2-2355, 12-4839, 20-5222
Toboggan-slides, on Mount Royal, 20-5223
Toby, character in "The Chimes," 2-2299
Todd, John, husband of Dolly Madison, 2-401
Todd, Mary, married Lincoln, 2-402
Toe-scap: see Shoes
Toes, of the foot, 10-2571, 2572-74
 walking without, 10-2470
 why ten, 2-2006
Toft, meaning of, 2-470
Toggles: see Knots
Togo, German colony, 11-2771
"To Wave and To Mold," by Johnston, 2-2101
Tollers of the Sea, by Hugo, 12-4223, 20-5212
Tolbooth, Edinburgh prison, 11-2813
 in "Heart of Midlothian," 7-1774
Toledo, college in, 17-4570
Toledo, Spanish city, 12-3228, 22-617
Tolls, of Panama Canal, 21-5598
Tolstoy, Leo Nikolalevitch, Russian writer, 22-5314
Toltecs, natives of Mexico, 17-4400
Tolmol, from benzol, 2-412
Tom, a pigeon, 20-5150
Tom, character in "Water Babies," 12-3331
Tomahawk, Indian hatchet, 10-2576
Toma Sea, a lake, 22-5848
Tomato, a food-plant, 1-15, 2-1159
 and Peru, 17-4510
 cultivation of, 12-2995; 12-3442 14-3554
Tomato-worm: see Cotton-boll worm
"Tom Bowling," by Dibdin, 14-3760
"Tom Brown at Oxford," by Hughes, 12-4137
"Tom Brown's School-days," by Hughes, 12-4137
Tombs, Gen. Grant's tomb, 3-787
 Gothic, 12-5041
 in rock, 20-5151
 Lady Grimston's tomb, 7-1701
 Mausolus' tomb, 20-5207
 Napoleon's tomb, 21-5533
 of Caliphs, 22-6122
 of Egyptian kings, 22-6184, 6187
 of Persians, 12-3859
 see also Egypt, India
Tommaso, and Canova, 20-5281
Tommy, problem concerning, 3-624
Tommy Toe-worm: see Tadpoles
Tompkin, in gnome story, 12-3875
"Tom Sawyer," by Mark Twain, 6-1608, 1620
Tomsk, Siberian town, 12-3804
"Tom Thumb," an engine 3-603, 605
Tom Thumb, a story, 3-719, 2-1478
Tom Tiddler's Ground, a game, 3-735
Tombit, a bird, 2-2220
 see also Blue-tits
Tom-toms, drums, 10-2576; 11-2752
Tonga Islands, natives of, 2-1491
Tongues, and 12-4225
 bleeding of, 12-4225
 of ant-eaters, 4-1017
 of bats, 11-2254, 2256
 of frogs, 2-4210
 of snakes, 4-1015
 of lizards, 4-1016, 1017
 of organ pipe, 12-3150
 of serpents, 2-1350
 of whale, 4-1070
 of wood-joints, 2-1360; 2-1351
 of wood, of, 11-2800
 of wood, of, 2-172
Tonsils, and taste, 12-4227
Tonty (Menni de), Italian explorer, 2-278
Tool-box, carpenter's, 2-222
Too Little! see Billie
Tools, cleaning, 17-4294
 for gardening, 1-349
 of Aztecs, 2-274
 of Indians, 1-14-17
 prehistoric, 1-206, 208; 2-1216; 22-6019
Tool-steel: see Steel, making
Too Much! see Parizza
Tooth, no third, 2-2008
Toothache, what gives, 1-127
Tooth-brush, use of, 2-2080
Tooth-powder, use of alkaline, 2-2080
Toothwort, a plant, 11-2234; 17-4472, 4474
Top, shows equilibrium, 14-3671
 spins forever, 2-694
Topaz, precious stone, 24-5277-78, 6283
Topham, F. W., pictures, 12-4023, 22-5224, 24-6228
Toplady, Augustus M., hymns of, 2-2017-18
 poems see Poetry index
Torques, of the Araucanians, 17-4506
Torah, law, 24-6334
Torbarg, diver of, 12-3296
Toroh, for light, 2-663
 Greek, and runners, 1-68
Torch-bearers: see Camp-Fire Girls
Torch-lily: see Kniphofia
Toro Lake, in Killarney, 21-5552
Toreadors, bull-fighters, 12-3245
Tories, Canadian loyalists, 2-1271, 1274
 during the Revolution, 4-1002, 1004, 1006-07
 6-1390
 during War of 1812, 2-1399
 see also Party, the Tory
Tornado, cause of, 22-5990-91
 see also Cyclones, Whirlwinds
Toronto, burning of, 2-1393-99
 capital of Ontario, 1-228-31; 2-756; 2-1454, 7-1770 2-3273; 21-5400; 22-6122
 Queen's Park, 1-229, 231
 York on site of, 3-757
Toronto Globe, influence of, 12-4223
Toronto University, in Canada, 21-5400, 5402
Torpedo, a fish: see Ray, electric
Torpedo, a swimming trick, 11-2726
Torpedo, of submarine, 22-5662
 use of, 22-6204
 working of a, 22-5858, 22-6209
Torpedo-boat, early use of, 22-6204
 rescue from, 12-3296
Torpedo-boat destroyers, of the United States, 22-6209
Torpedo-bombs, 1-122
Torpedo-boat, fancy swimming, 12-3899
Torquatus: see Manlius, Titus
Torque, golden collar, 10-2666
Torquemada (Juan de), and rubber, 22-5793
Torquillstone, Castle of, in "Ivanhoe," 7-1666
Torrens, Lake, discovered, 2-367
Torres, Luis V. de, Spanish sailor, 2-1367
Torres Straits, between Australia and New Guinea, 2-1492
Torretto, and Canova, 20-5282
Torricelli (Evangelista), Italian physicist, 12-3978-80
Tortoise, a reptile, 2-671; 2-1209; 7-1897; 2-2349-50, 14-3666; 24-6271, 6274
 and eagle, 12-1096
 and hare, 2-503
 and Japanese boy, 22-6027
 as a pet, 2-514-15; 12-5123
Tortoise, character in "Alice in Wonderland," 12-3158
"Tortoise," of Roman army, 22-5914
Tortoise-shell, a butterfly, 22-3012, 3020
Tortoise-shell, for handles, 12-4264
 from West Indies, 22-6045
Tortugas Islands, nodules on, 2-2240
Torture, Indian, 1-21; 4-824
 of martyrs, 12-5084
Totem, of Indians, 1-17
Totem-poles, from Alaska, 12-4057
 of Indian, 22-5274
"Totter's Miscellaneous," collection of poetry, 21-5484
Toucan, a bird, 7-1759, 1761
Tough, and night, 21-5216
 lines of, 2-1165
 sense of, 2-1284, 14-4291-92
 tongue, organ of, 2-3274
Tough-back: see Football

GENERAL INDEX

Tough-hodies, of skin, S-2984
Tough-centre, in the brain, 10-3882
Tough-down: see Football
Touch-me-not, a plant, 10-1135, 12-4762
Touchwood, from fungus, 10-4682
Toad, bishopric of, 10-3068
Tomlin, defence of, S-2887
 French royalists of, 12-4459
 Nelson at, 17-4884
Toulon, French city, S-2432
Tourmaline, a gem, S-5275, 5282
Tournement, Mount, in Canada, S-2124
Tournament, for King Arthur's diamond, S-1200
Tourniquet, use of, 10-1117, 12-4222
Tours; battle of, S-2644
 French city, S-2423
Toussaint L'Ouverure, revolution of, 22-5044
Tousal, Edward, carpenter, 4-1062
Tousal, Thomas, carpenter, 4-1083
Tow, course hemp, 10-4609
Tower, Giotto's, 11-2797
 Martello, S-754
 measuring a, 22-5005
 Metropolitan, S-1542
 picture by J MacWhirter, 12-5119
 Pisa's leaning, 12-3080, 14-5591
 round, 21-5555
 see also Lily-tower
Tower-bridge, 1-24, 22
Tower Falls, in Yellowstone Park, S-527
Tower of London, history of, S-472, S-590, 776,
 S-855, S-1254-55, 7-1682, S-2325
 little princes in the, S-1992, 12-4684
 Nithsdale's escape from, S-2225
Towhee, egg of, 7-face 1756
Town, how the children saved the, 4-982
Towns, free, 10-2598, 12-2986
 see also Hansatic League
Toy, Egyptians' toys, 12-4344, 4849-50
 mending broken, 12-4294
 to disguise voice, 22-6170
 to measure wind, S-1598
 toys of Greek children, 20-5206
Toy-railway, 14-3638
Toy-submarine, how to make, 12-3431
Toy-torpedo, making, 12-3901
Toy-zoo, animals for, S-619, 727, 4-840, 927,
 S-1600, 12-3117
Tracy, De, built fort at Sorel, 22-6124
Tracks, of railway, S-312
Tractor, for agriculture, 11-2714
Traddles, character in "David Copperfield,"
 11-2863
Trade, Congress and, S-1435
 laws forbidding foreign, S-1397
 of colonies, 4-893-94
 see also Commerce
Trade-councils, of Canada, 10-4128
Traders, of fur-trade, 12-4836, 4838
Trade-unions: see Labor-unions
Trade-wind, and rain, 22-5874
 cause of, 12-4282, 22-5999
Tradition, meaning of, 11-3804
Trafalgar, battle of, S-1112-15, S-2288,
 12-frontis, 3346, 17-4363, 4366, 21-5622
Trafalgar Square, in London, S-1261-62, 12-5040
Trapopan, a pheasant, S-1659-60
Trail, how to follow, 7-1354
Trading-arbutus, a plant, 17-4557, 4561
 see also Maydower
"Trail of the Sword," by Parker, 10-4227
Train, George Francis, and rail-run vehicles,
 S-5055
Train, and curves, 12-4012
 and motion, 12-4217
 electric-driven, 24-6251
 fast, 12-4469
 games to play on, 12-2925; S-5078
 keeps on the rails, 4-920
 one-rail, 1-97
 power of stopping and starting, 20-5174
 problems concerning, S-491; S-424, 730, 4-570
 railway, S-300-01, 315, S-509; S-2362, 22-6054-55
 saving the trains, 12-4572
 smoke of, 7-1284
 speed of walking in a, S-513
 trains and the stars, 1-face 1
 upside down, S-2240
 wireless outfit on, 14-5522
Trojan, Roman emperor, buildings of, S-5282
 column of, 12-5041, 5044
 reign of, S-525
Transatlantic, Lithuanian party, in "Gulliver's
 Travels," S-1237
"Transatlantic,"
 12-face 1024
Transcript, first set, 7-121
Transit, City of, 12-4240
Transfer, 12-4240
Translation, form of, 12-4240
Translucent, 12-4240
Transmission, for, 12-4240
 5678
Transparency, of objects
Transparent, meaning of
Transplanting, in summer, 12-4240
Transpositions, a puzzle, 12-4240
Transylvania, history of, 12-4240
Transylvania Company, 12-4240
Transvaal, gold in, S-5312
 history of, S-1122
Trap-ball, a game, S-1602
Trap-door spider, habits of, 12-4240
Trappell, Walter, diver, 12-4240
Trappers, for furs, 12-4240
 Indian, 12-4240
 see also Fur-trade, etc.
Traps, for fur-animals, 12-5076
 for lobsters, 12-3966
 see also Hunters, Plants, Insects, etc.
Trasimene, Lake, 20-5276
Travel, in early United States, S-1202
Traveler, and the bear, 17-4240
 and the heron, 24-2282
 and the wolves, a game, S-712
 difficulties of early, 1-207, 2-4240
 problem of the dinner, 12-4240
 tiger and the, 22-6122
Traverse, the Indian, 12-2577
Trawl, for fishing, 12-3022, 12-4240
Trawler, a boat, 12-3842
Tray, how to make, S-481
Treasure, of Beowulf, 12-5502
 of Egyptian tombs, 12-4544
 of Rhampsinitus, 7-1012
 recovered by divers, 24-2212
 stolen from Westminster, 12-4240
"Treasure Island," by Stevenson, S-1227,
 14-3821
Treasure-ships, of Spain, see Gallies
Treasure Valley, in "King of the Golden
 River," S-1527
Treasury Department building, 7-1692
Treasury, United States Secretary of, duties,
 12-4240
Treaties, and Congress, S-1299
 making United States, S-1435-36
 see also Reciprocity
Tree of Life, in "Pilgrim's Progress," S-1129
Tree-pitpit, egg of, 7-face 1760
Trees, age of, 4-919
 American, 20-5327, 21-5429
 and Gothic arch, 12-3270
 bark of, 4-919
 British, 14-3522
 connected with Boone, 24-2252-54
 do not die in winter, 20-5174
 elasticity of, 4-921
 fairies of the, 12-4285
 flowers of, 1-122, S-3085, 11-2877
 for Europe's ships, S-2262
 for Indian messages, S-2262
 for paper, 4-942
 goddess and the, 12-4240
 growth of, S-1586, 12-3506, 4024
 in Alaska, 12-4060
 measuring height of, S-1242, S-5254; S-5242
 of Barrera, S-1212
 on grave of Lady Grimston, 7-1221
 or seeds, priority of, S-5222
 plucking leaf does not hurt, 12-2147
 poisonous, 14-3445
 runic encodings, 12-4202, 4222
 show direction, S-1695
 straightness of, 12-4202
 struck by lightning, 11-2202
 sugar from sap of, S-702
 tides about, S-2775
 trees about, 12-3222, 12-3232, 2741
 the Turning Tree, 12-4240
 turned to coal, 12-3552
 Wood of, S-5222
 see also Wawona Tree
Tree-sparrow, a bird, 12-3461
Tree-swallow, a bird, 12-3461
Tree-wasp, an insect, 12-3461
Trefels, plants, 12-4240, 22-4240-42

GENERAL INDEX

- Treasure**, Squire, in "Treasure Island," 14-3630
Trench, digging, 18-5121
 for seat and table, 18-4045
Trent, Hall, character in "Old Curiosity Shop," 11-2773
Trent, ship, 8-2048
Trenton, battle of, 4-1004-05
Trent River, in Canada, 1-228, 3-556
Trent Valley, Indian route through, 1-228
Trepan; see Sea-cucumber
Trepan, Sir Thomas, betrayed gunpowder plot, 7-1808
Trestle-tees, of mast, 18-4619-20
Treves, German town, 11-2768, 18-4238
Trevithick, Richard, engine of, 8-600, 603
Trials, English act concerning, 4-1042
 in America, 8-1437-38
Tribes, added to Russia, 14-3722
Tribes, Ten Lost, of Israel, 22-6116, 24-6330
Tribunal of Westphalia, 6-1496
 "Tribe of the People;" see Mirabeau
Tribune, Pietro, Doge of Venice, 8-1170
"Tribute Money," picture by Masaccio, 17-4592
Trick, a drawing, 22-6170
 a leg, 22-6170
 in moving-pictures, 22-5143
 in the water, 18-2898
 matchbox, 8-383
 of the eye, 1-112
 set of simple tricks, 1-106
 sleight-of-hand, 8-2368
 swimming, 6-1362
 the "sell," 4-940
 to play, 4-848; 7-1737; 17-4492; 18-5130
 with a book, 8-1097
 with matches, 8-781
 with nuts, 22-5740
 with string, 22-5922
 see also Things to make and things to do
Tricolor, flag of France, 8-2291
Triser; see Trèves
Trisler-Rah, picture of, 10-face 2600
Trillium, a flower, 11-2876-80
Trinidad, island of, 21-6412, 23-6041, 6047-48
Trinity Cape, or Rock, on the Saguenay, 7-1771
Trinity Church, in Boston, windows of, 18-4221
 in New York, 18-5014
Trinity-herb; see Pansy
Trivet, a prize, 18-5040
Trivet-stand, making, 14-3785
Tripoli, battle of, 12-3005-06
 in Africa, 18-4307-08
 pirates of, 12-3480
"Tristan and Isolde," by Wagner, 13-3293
Tristram, of Lyonesse, Sir, legendary hero, 12-3282
Troch, a game, 4-965
Trogon, a bird, 7-1764; 9-2343
 see also Quetzal
Trojan, wars of, 1-78, 76, 78; 4-980
Trolope, Anthony, British author, 9-2321, 2328
Tromp, Dutch admiral, 1-1041, 7-1862, 18-3547
Trompet, character in "Faerie Queene," 3-699
Tromsøfjord, in Norway, 14-3662
Troop, Sea, character in "Captains Courageous," 20-5374
Troop, Dakota, character in "Captains Courageous," 20-5374
Tropic-bird, of the Southern Ocean, 7-1644; 8-2440
Tropics, cause trade winds, 18-4232
 heat of, 12-2045
Trot, and heart of little, 20-5287
Trotter, a horse, 22-6068
"Trotty," character in "The Chimes," 9-2299
Trotwood, Henry, character in "David Copperfield," 11-3561
Trotter, what to do in, 12-3440
Trotter, in Pandora's box, 18-5112
Troat, fishes, 18-4794-05; 18-3843
 see also Brook-trout
Trotter, a stopper, 18-3380
Trotter; see Adder's-tongue
"Trotter, L." by Verdi, 12-3294
Trow, of Abolition, 20-6123
Trow, history of, printed by Caxton, 14-3612
 story of, 1-78, 76; 18-3374; 18-3936; 20-6200, 6212
Troy, H. F., erected statue to Emma Willard, 18-4120
Troze, age of, 4-1006
Troze, of engine, 8-304
 of mast, 18-4619, 4620
Trozo, in Nevada, 9-2383
Trudeau, Dr. Edward L., and Saranac, 22-5949
Trudgen, swimming stroke, 18-3899
True, Uncle, character in "Lamplighter," 6-2098
True Love; see Britomart
Truffle, edible fungus, 18-4823
Trumbull, John, American artist, 18-4216
 pictures of, 4-1003, 7-1636; 18-4217
Trumpet, increases sound, 18-5023
Trumpeter, a bird, 8-1976
Trumpeters, pigeons, 9-2220
Trumpet-vine, state flower, 22-5315
Trumpet-wood; see Joe-Pye-wood
Trunk of the body, 18-4201; 18-4829
Trunkies, a dance, 11-2805
Truro, W. S., agricultural college at, 21-5544, 5546
Truth, and thinking, 18-5083
 magic pen of, 8-2062
Truth-teller, The; see Alfred the Great
Truxton, Thomas, American naval captain, 12-3006
Tryon, D. W., American painter, 18-4252, 4254
Tryon, William, governor of North Carolina, 4-998
Trysail, of ship, 18-3959-60
Tsai Lun, invented paper, 12-3484
Tear, girl who saw the, 18-2446
 see also Czar
Tschalkovsky, Peter, musician, 12-3293
Tsetse-fly, injurious insect, 12-3194, 3203-04; 24-6368
Tuatera, a lizard, 23-6001
 see also Sphenodon
Tube, Eustachian, 24-6224
 ivory, in "Magic Carpet," 7-1710
 liquids ascend, 18-4877
 of skin, 18-4117
 pneumatic, 12-3410-11
 to the ear, 18-3916
Torricellian, 12-3978-80
 see also Guna, Jack, house of
Tuberculosis, and alcohol, 21-5429
 and Saranac Lake, 22-5950
 cure of, 18-4627
 dangerous disease, 4-821, 906-09, 7-1804; 11-2801-02; 12-3220, 24-6366-68
 in cows, 11-2831
Tuck, the Friar, 10-2630
Tucuman, battle of, 20-5361
Tudor, Henry; see Henry VII, king of England
Tudor, furniture of, 23-6177
Tudor-rose, heraldic flower, 13-3470
Tudors, and Ireland, 21-5554
 English reigning family, 4-856
Tuesday, name of, 1-93
Tugby, character in "The Chimes," 9-2301
Tug-of-war, a game, 3-735, 18-5122
 between steamships, 10-2489
Tugs, naval, 22-6214
 sea-going, 10-2498
 work of, 10-2497
Tullier, Palace, in Paris, 7-1820, 9-2284, 2291; 18-4108, 4109, 21-5536; 22-5848
 see also Swiss Guards
Tukulti-Ninur, king of Assyria, 18-4964
Tula, iron-works from, 18-3892
Tulips, flowers, 6-1602, 7-1738, 14-3546, 18-face 2808; 20-5330
 see also Music
Tulip-tree, or whitewood, 20-5342, 5345, 5352
Tullamook, lighthouse bn, 8-749
Tully-Neelan, in "Waverley," 6-1498
Tumbas, on Gulf of Guayaquil, 17-4510
"Tumble-down Dick;" see Cromwell, Richard
Tumbler, a pigeon, 9-2217, 2219
Tumbler, of lock, 24-6359
Tumblers, how did frogs jump in? 6-1601
 magic tumbler, 9-2138
 tricks with, 1-106
Tumble-weeds, plants, 18-4210, 4213
Tummelbach Falls, in Switzerland, 22-5645
Tun, meaning of, 2-470
Tundra, Russian plains, 15-3797
Tune, of a wireless-apparatus, 14-3583
Tungsten, a metal, 8-668; 22-5996, 6092
Tungusians, Siberian tribe, 18-3503
Tunicates, development of, 14-3665
Tuning-fork, and wood, 18-4691
 sound of, 12-3225; 18-4908, 5058-59
 vibrations of, 18-4868, 4872
Tunis, city of, 23-6100
Tunis, Dey of, and Vincent de Paul, 15-3076
Tunis, French colony, 9-2435-26; 18-4897-98
Tunkhannock Creek, viaduct over, 1-85

GENERAL INDEX

Tan-Zi, character in story, 22-5771
Tunnel Mountain, view from, 22-5942
Tunnels, beneath Alps, 24-3153-59
electric locomotives, 2-315
Mont Cenis Tunnel, 2-2418
of insects, 11-3850, 3860
of New York Aqueduct, 20-5194-98
Thames Tunnel, 2-405
under the Channel, 2-2415
see also spiders
Tunnies, fish, 10-2423, 2907
Tupayas, Indian tribe, 17-4606
Tupis, Indian tribe, 17-4508
Tupman, character in "Pickwick Papers," 10-2459
Tupper, Sir Charles, premier of Canada, 2-1231, 12-4328, 4326
Tupper, Mount, in Canada, 22-5780
Turbin-engine, power of, 10-2494-95
Turbinas, for generating electricity, 11-2715
Turbit, a pigeon, 2-2217, 2219
Turbo-generator, for electricity, 24-6352
Turbot, a fish, 10-2605-08, 15-3547-48
Turcomans, branch of Turkish race, 6-1636, 15-3924-26, 3931, 22-6066
Turgenev, Ivan, Russian writer, 20-5314
Turkistan, history of, 15-3923
map of, 15-3924
Russian, 15-3904
Turkey, and Africa, 12-4204, 4207
and Bosnia and Herzegovina, 12-3244
and the Crimean War, 2-2290
and the Great War, 12-3247
and turquoise, 24-6333
constitution of, 12-3246
costumes of, 12-3245
history of, 2-1118, 2-1434
in Asia, 15-3851, 3855, 3862
Jews in, 24-6334
maps of, 12-3184, 15-3851
parliament of, 12-3239, 3246
rise and fall of, 12-3185
sponges and, 12-4267
sultans of, 12-3239
Turkey, a bird, 1-15, 6-1558, 1563-64 9-3342
in race, 12-4612
quills for pens, 12-3422
Turkey-buzzard, a scavenger-bird, 7-1895-99, 2-3422
Turkish Delight, a candy, 14-3552
Turks, and Austria-Hungary, 10-2559, 11-2896, 2900, 2903, 21-5652, 5656
and Bulgaria, 12-3242
and Charles V, 10-2556
and Crusades, 6-1549, 1552
and Jerusalem, 24-6331
and Rome, 20-5282
and Russia, 14-3723-24, 3727-28
and Venice, 12-3080
branch of the Mongols, 15-3926
defeated by Poland, 11-2894
in Egypt, 12-4302
in Europe, 1-132, 14-3728-29
in Serbia, 12-3242
Ottoman, 12-3190
rulers of India, 7-1714
Seljuk, 12-3190
see also Balkans, Lepanto, Mohács, etc
Turner, C. F., American painter, 12-4252
Turner, Charles Tennyson; see Tennyson-Turner, C
Turner, Mrs. Elizabeth, poems. see Poetry index
Turner, J. M. W., English artist, 2-761, 766, 12-4252, 17-4591, 4598
Turner, Joseph, song of, 12-3050
Turnips, cultivation of, 12-3962, 12-4134
for hanging baskets, 22-6080
Turnpikes, a game, 12-4040
Turnus, king of the Rutuli, 1-76
Turpentine, from pines, 21-5430, 22-5952
Turquoise, magic, in story, 20-5285
precious stone, 24-6375, 6382
Turtle, a reptile, 2-1209, 10-2407
fossil eggs of, 11-2918
Indian clan of, 1-190
Turtle-dove, bird, 2-2217
Turkishhead, a plant, 12-5092, 5096
Tuscany, Italian province, 12-4074, 3080
Tuscaroras, Indian tribe, 1-21; 2-432, 4-594
Tusher, Rev. Tom, character in "Henry Esmond," 12-3211
Tusk, animals' tusks, 12-3667
of elephant, 2-2078, 11-2917
of mammoth, 12-3604
of narwhal, 4-1074

Tusk, of walrus, 4-1062, 1074
Tussocks, landscape, in 2-2078
Tutula, island of, 12-3792
Tver, province of, 12-3792
Twachtman, John W., 12-3792
12-4252
"Twain is the great man," 12-3792
12-3792
Tway-blade, an 12-3792
Tweedledum and Tweedledee, 12-3792
Tweed River, 12-3792
"Twelfth Night," by Shakespeare, 12-3792
Twelve Apostles, statues of, 12-3792
"Twenty Thousand Leagues Under the Sea," Verne, 12-5049; 22-6147
Twickenham, Pope's villa at, 22-5942
Twigs, flattened, 12-4664
how to draw, 2-744
in Indian messages, 2-3222
peep inside lime-tree, 2-3222
Twiller, Wouter van, character in "Knickerbocker Days," 22-5531
Twins, making, 12-4003
Twin-flower, a plant, 12-3064
Twins, the Heavenly, 10-2642, 2645
see also Gemini
Twist, Oliver, character in "Oliver Twist," 2-3220, 10-2562
Twisted-stalk, a plant, 11-2884
"Two Gentlemen of Verona," by Shakespeare, 2-432; 21-5554
"Two Little Confederates," by Page, 2-1021
Two Natures in Man, a statue, 12-4072-73
Twopeay, William, an artist, 22-5522
Two-shoes, Little Goody, in story, 22-5175
"Two Years Before the Mast," by Dana, 24-6332
Tybalt, Shakespearean character, 2-427
Tyburn, exposure of corpses on, 12-4267
Ty, Granny and, Grandfather, characters in "Blue Bird," 22-5324
Tyler, John, administration of, 12-3422, 3491
as president, 7-1240; 9-2280, 2282
college of, 17-4568
Tyler, Wat, revolt of, 2-772
Tylo, character in "Blue Bird," 22-5327, 5329
Tytyl, character in "Blue Bird," 22-5325, 5327
Typanum; see Ear-drum
Tyndale, William, English author, 12-2585; 15-3929, 3942
Tyndall, John, English philosopher, 2-392; 4-865, 871, 12-5062
Type, in printing, 4-950, 14-3606, 3614
Type-metal, alloy of lead and antimony, 7-1232; 10-2680
Typewriter, development of, 11-2712
Typhoid, microbes of, 4-321
Typist, and dictaphone, 21-5608
Tyr, Norse god, 1-93
Tyrannosaurus, prehistoric animal, 20-5324-
Tyrannus tyrannus; see Kingbird
Tyre, Asiatic city, 6-1553, 20-5202
Tyrol, and Austria, 1-122, 11-2586, 2902
mountains of, 12-3392
Tze-hsi, empress of China, portrait of, 1-face 112

U

Udder, milk-making gland, 6-1657
Ufa, mining district, 12-3804
Uffizi Gallery, in Florence, 11-2792
Uganda, African protectorate, 12-4205-06
"Ugly Duckling," authorship of, 2-1472
Uhland, Ludwig, German song-writer, 12-3296-97
Uhlans, and the bees, 20-5394
Ujji, scene of meeting of Stanley and Livingstone, 2-302
Ulm, German town, 11-2792
Ulin, home of the arm, 12-2571; 12-4200
Ulster, county of Ireland, 4-1036; 21-5551
Umbagog, origin of, 21-5556
Umbagog, Night, 12-4282
Umbagog, Friends Meetinghouse at, 22-5956
Umbagog, Greek hero, 1-73-74; 4-980
Umbagog, family of plants, 12-6092
Umbagog, of flowers, 12-6092
Umbagog, drying, 21-5617
mending, 12-4254
of paper, 12-4255
Umbagog-ant; see Sauba ant
Umbagog-bird, picture of, 2-1757, 1762
Umbagog, in Italy, 20-5271
Umpire, for baseball, 22-6249

GENERAL INDEX

Una, character in "Faerie Queene," 3-637-39
 Unalut, Indian, 1-193
 Unalut, adventure of, 21-5431
 Unalut, an Indian, 1-195
 "Unalut, a book," published, 6-1617; 2-3043.
 3094, 12-3492
 "Underdog," picture, by Homer, 12-4248
 Underworld, in "Pilgrim's Progress," 2-1181
 Unkaka, story of a water-nymph, 12-4063
 Unkaka, district of, 2-1261, 2-1915
 Ungulates, hoofed animals, 14-3663
 Unicorns, a constellation, 10-2645
 Unicorns, and yellow dwarf, 4-1052
 horns of, 1-315
 Unicorn-hall, of the sea, 12-2483
 Union, a flag, 21-5492
 Union, Act of, concerning Ireland, 2-1116
 for Canada, 2-759
 Unionists, of Argentina, 20-5362
 Union Jack, of England, 21-5492
 see also England, flag of, Union Jack of
 Union of South Africa, 2-1120
 Unitarian Church, beliefs of, 12-4163
 United States, and Barbary Pirates, 12-4307
 and Cuba, 22-6046
 and Danish West Indies, 14-3653
 and French in Mexico, 2-2290
 and Mexico, 17-4404
 and Panama Canal, 21-5594
 and Samoa, 2-2156
 and Venezuela question, 12-4604
 animal products of, 12-2677
 animals of, 2-681, 684, 5-1211-12
 Army of, 4-1009
 building the New Nation, 6-1282
 butter in, 2-1132
 Cabinet of, 2-1393, 2-2040
 canals of, 12-3688
 census, 2-2383
 climate, 1-10, 12-15, 2-2384
 colleges and universities in, 17-4567
 constitution and amendments, 6-1391, 1400,
 1454-55, 7-1826, 2-2041, 2044, 2057, 2-2377,
 12-2436-37, 2439, 12-3495
 cotton in, 12-4386-87
 crops of, 2-2384
 cutlery in, 12-4302
 days celebrated in, 17-4463
 disease in, 11-2301
 dispute with Colombia, 12-4604
 entered Great War, 12-3495
 fisheries of, 12-3441
 fishes of, 12-3701
 flags of, 2-1115, 7-1653; 17-4467, 21-5494
 free land of, 12-2688
 fruit in, 2-2386, 22-5714
 glimpses of the Southern, 22-5957
 growing West, 7-1831
 history of, 2-1114, 12-4079
 holidays, 17-4470
 House of Representatives, 6-1391, 1425-26;
 2-2041
 how governed, 2-1423
 immigrants of, 12-2688
 invasion of Canada, 2-756
 islands of West Indies, 22-6048
 lakes of, 1-14
 lost duties because of comma, 22-5743
 manufacturing in, 12-2682
 marble in, 20-5349
 mountains of, 1-10, 12-13
 national game in, 22-5247
 Navy of, 12-3004, 3006
 neutrality of, 6-1394
 olives in, 22-5716
 oysters in, 12-3351
 painters of the, 12-4215
 pheasants in, 2-1559
 pins in, 12-5003
 plants of, 12-5527; 12-5034
 population of, 6-1392; 7-1656; 2-2382
 presidents of, 2-779; 6-1392, 1396, 1424-26;
 7-1426; 12-4489
 products of, 12-4478
 railroads of, 2-605; 12-3622
 reconstruction period, 2-2057
 salt in, 1-315
 Senate, 2-1391, 1424-25
 silkworms in, 7-1829
 size of, 2-2382
 social life in, 6-1392, 1394
 states of, 12-2435
 sugar in, 2-702, 701-02
 trees of, 2-612; 2-2041-42

United States, tea in, 22-5971-72
 treasury, 12-4491
 trouble with England, 12-3494
 two spies of Revolution, 12-3512
 united nation, 2-2377; 12-2377
 vice-presidents, 6-1425-26, 1428; 2-2380
 volcanoes: see Volcanoes, in the United
 States
 wages and machinery in, 11-2711
 war with France, 12-3483
 wheat in, 2-1122, 11-2947
 see also America, Animals, Civil War, United
 States, Mexican War, Monroe Doctrine,
 Philippines, Plants, Revolution, American,
 Spanish War, Tariff, War of 1812, etc.
 United States, ship, 6-1393, 12-5006-07, 12-4665
 United States Bank, and Jackson, 7-1840
 destruction of, 12-3491
 United States, Book of the: see Tables of Con-
 tents
 United States Military Academy, at West Point,
 12-4738
 see also West Point
 United States Naval Academy, at Annapolis,
 12-4741
 see also Annapolis
 United States Sanitary Commission, 12-2122
 United States Sub-Treasury, in New York,
 12-5017
 Univalves, shell-fish, 12-3613
 Universe, size of, 7-1790
 what it is, 1-2, 140-41, 2-1964
 Universities, Arab, 22-6182
 in Canada, 21-5402
 what they are, 17-4567
 see also Canada, education in
 Unknown Knight, character in "Ivanhoe," 7-1667
 Unready, Thai see Ethelred, the Unready
 Unter den Linden, street in Berlin 12-2597,
 11-2762, 2791
 Unterwalden, canton of, 12-2986, 2988
 Unthrifthead, quicksand of, in "Faerie Queene"
 2-700
 Upland-Flower, a game bird, 2-2341
 Upper Bow Valley, scene in, 22-5943
 Upper Canada, capital of, 22-6122
 province of, 2-758, 2-1271
 see also Canada
 Upper Canada College, in Canada, 21-5402, 5405
 Upsala, university town, 12-3680
 Upsall Castle, legend of 2-1995
 Upward, result of traveling, 21-5639
 Ur, Asiatic city, 12-4960, 4962 24-6329
 Ural Mountains, in Europe, 14-2721 15-3798,
 3804-05, 22-5875
 Uranium, an element, 5-1319, 6-1447, 10-2652
 12-4276
 Uranus, a planet, 1-148, 7-1683, 2-face 1959,
 2-2249, 2389, 2392, 2394
 Urban, the Good, 4-1030
 Urban II, a pope, 2-1550
 Urban VIII, pope of Rome, and Lorraine,
 12-5108
 Urechin, a hedgehog, 6-1426
 Urea, manufactured, 12-4116
 Uri, canton of, 12-2986, 2988
 "Uriel," Emerson's, 7-1683
 Uriel, in "Paradise Lost," 22-5679
 Urso Major: see Great Bear
 Ursula, St. and the 10,000 Maidens, 4-1024-25
 Ursula, character in "John Halifax," 12-3970
 Ursus: history of, 20-5362, 5370
 Indians 22-547-4509
 South American Republic, 12-4603, 4610
 Uruguay River, in South America, 20-5365
 Utah, power of, 22-5816
 history of, 7-1829, 1844, 1846, 12-3492, 3494
 metals of, 12-2680
 purchase of, 12-3488
 Utensils, of Indiana, 12-2672
 Utica, town in New York, 12-4766
 "Utopia," by More, 12-3942
 "Utopia, Ltd.," by Sullivan, 12-3293
 Uvraet, bishop of, 12-3542
 Uvraet, town in Holland, 14-3540
 Utrecht, Treaty of, and peace, 2-553, 12-2560;
 12-4632; 21-5545, 24-6294

V

Vaal River, in Africa, 22-5214
 Vaccination, for disease, 10-4474, 11-2301,
 12-4652
 Vaccines, for disease, 22-6295

GENERAL INDEX

- Venice, monuments of, 19-5041
 painted by Turner, 3-761
 painting in, 6-1477
 see also St. Mark, church of, in Venice, San Marco, library of
- Venice of Spain! see Cadiz
- Venice of the North! see Stockholm
- Ventilation, of bee-hive, 11-2854
 of coal-mines, 17-4375
 of rooms, 18-3903, 18-4274
 see also Air Jack, house of
- Ventricle, of the heart, 6-1596
- Venus, and the golden apple, 7-1710
 and the myrtle, 18-4866
 goddess of love, 1-78, 7-1903
 of Milo, statue, 18-4173, 4179
 Titian's picture of, 8-762
- Venus, the planet, 1-140, 144; 7-1681; 8-1960, 1962, 8-2249, 2388-89, 11-2802
- "Venus and Adonis," by Shakespeare, 21-5584
- Venus of the Woods! see Ash, European tree
- "Venus with the Graces," by Botticelli, 18-5102
- Ves, the spring, 12-3374
- Vera Cruz, building of, 2-274
 history of, 7-1844-45, 12-3445, 17-4398, 4402, 4404
- Verb, a part of speech, 12-3329, 3375, 3465
- Verbores, commander of a fort, 7-1671
- Verbores, Medalline 4a, and the Five Nations, 4-894, 7-1971
- Verdugo, condemned, 2-434
- Vespa, Cape, circumnavigated, 12-3340
- Vesali (Giuseppe), composer, 12-3294
- Vesuvius, a salt of copper, 21-5689
- Vesuvius, bishopric of, 10-2555
- Vere, Sir Arthur de, in "Anne of Geierstein," 8-1486
- Vere, Isabella, in "Black Dwarf," 8-1497
- Vesper, Shakespearean character, 2-564
- Vespa, Peter, Doukhobor leader, 22-5944
- Versinoph, Lord, character in "Nicholas Nickleby," 10-2671
- Verity, Kate, saved child, 18-4681
- Vermicelli, made of wheat, 11-2949
- Vermont, admitted, 7-1831; 12-3489
 and flag, 21-5493
 flower of, 22-5316
 gems from, 24-6382
 marble of, 10-2680 20-5349
- Vernes, Jules, writings of, 18-4115, 19-4909, 5049, 22-5857
- Vernon, Diana, heroine of "Rob Roy," 6-1622-23
- Vernon, Prince of, Shakespearean character, 2-448
- Verona, tomb of, 19-5041
- Vernone, Paul, Italian artist, 5-1177, 1179
- Vernonia, cultivation of, 2-2039
- Verrazano (Giovanni da), Italian navigator, 2-276, 279 3-553
- Verrocchio, Andrea del, Italian painter, 5-1172, 1174, 17-4580
- Versailles, Palace of, history, 3-2074, 3-2279-82, 2290, 10-2599-2600, 18-4103 21-5636, 5538
- Versalius, Andreas, Flemish physician, 18-4630
- Verve, blank, 1-102
 different kinds of, 2-369
 made with figures and letters, 22-5742
 see also Poetry
- Vertebra, bones of spine, 3-675, 10-2463-66, 2471; 16-4300
- Vertebates, animals with back-bones, 3-675; 10-2463, 11-2919
- Vertigo, what it is, 2-2248
- Vernian, Lord! see Bacon, Sir Francis.
- Vernian, story about, 22-5912
- Vespasian, emperor of Rome, reign of, 2-539; 20-5282; 24-6334
- Vesper-sparrow, a bird, 12-3460
- Vespa, America, name applied to America, 1-68, 2-271
- Vespa, of temple, 20-5153
 sound of empty, 12-3774
- Vespa, of Mammoth Cave, 5-1306
- Vespa, Mount, eruption of, 21-5281
 Italian volcano, 6-1644; 20-5281
 legend of, 16-3668, 22-6322, 6228
- Vespa, plants, 10-4185, 17-4851-52
- Vespa, over Tunkannock Creek, 1-35
- Vespa, and sound-waves, 6-511-12; 12-3225, 14-3774; 17-4579
 and talking-machines, 21-5281
- Vespa, form of motion, 2-517; 12-3429; 16-4034
 of motion, 18-4212
 of musical instruments, 7-1791; 19-4904; 22-5638
- Vibrations, of telegraph lines, 7-1886
 study of, 12-4863
 sympathetic, 18-5058
 see also Sound
- "Vicar of Bray," song, 14-3771
- Vicar of Christ! see Pope
- "Vicar of Wakefield," by Goldsmith, 7-1752
- Vice, or vice, carpenter's, 8-1940
- Vice-admiral, naval rank, 22-6214
- Viceroy, of India, 6-1828
- "Vich la Vohr!" see Macivor, Fergus
- Vicksburg, city in Mississippi, 22-5900
 during the Civil War, 2-789, 2-3847, 2050-51
- Victor (Glande P.), French marshal, 17-4266
- Victor Emmanuel, king of Italy, story of, 1-135, 2-344, 7-1658, 12-3086
- Victoria, queen of England, and songs, 14-3770-71
 and tortoise, 2-514
 cable messages of, 10-2494-96, 12-4697
 favorite gem of, 24-6382
 reign of, 2-1116-30, 7-1750
- Victoria, Australia, history of, 6-1370, 12-3463
- Victoria, capital of British Columbia, 1-232, 22-5780, 5783
- Victoria Bridge, over St. Lawrence, 5-1275; 8-2273, 22-6124
- Victoria Cross, men who have won, 15-3823
- Victoria Day, in Canada, 17-4463
- Victoria Falls, in Africa, 12-3400, 18-4390
- Victoria Land, discovery of, 21-5464
- Victorian Era, a period, 8-1120
- Victoria Nyansa, lake in Africa, 18-4299, 4306, 4308
 railroad to, 22-5806
- Victoria University, in Toronto, 21-5407
- Victory, Column of, 11-2762
 group of, and Napoleon I, 11-2762
 of Samothrace, 18-4172 21-5539
- Victory, ship, 11-frontis, 17-4368, 21-5459
- Vidocq (François M.), French detective 19-5112
- Vidomar, treasure of, 2-2019
- Vienna, Duke of, Shakespearean character, 3-561
- Vienna, alcohol and children in, 21-5440
 capital of Austria, 10-2594, 11-2899, 12-3244
 fire in, 22-5756
 history of, 10-2559 11-2896, 2898, 2900, 2904-05
 musicians of, 12-3284, 3287-88
 Turks sought, 12-3194
- Vienna, Congress of, of European powers, 6-2289, 10-2592-94, 11-2905 12-2991-92, 1082
- "View of the Seine," picture by Martin, 18-4251
- Vigier, Jean, and his mother, 16-4091
- Vigilance Committee, action of, 7-1848
- Vikings, sea-raiders, 2-468 14-3652, 3662, 3722
 words in English, 18-4618
 see also Charles XII of Sweden
- Villa, General Francisco, revolt of, 17-4404
- Villa, for Modeltown, 4-845
- Village, German, 10-2548
- Village, of earthquake-resisting houses, 12-3254
 of Hungary, 21-5657
 of Iguarotes, 2-2158
 of Pueblo Indians, 14-3624
 see also Modeltown
- "Village Blacksmith," by Longfellow, 2-673; 6-1613, 1616
- Villageois, et la vipère, 21-5532
- Villager, and the viper, 12-3270
- Villiers, M. de, character in "Count of Monte Cristo," 16-4316, 17-4432
- Ville-Marie de Montreal! see Montreal
- Villeneuve, French admiral, 17-4364
- "Villotte," by Brontë, 10-2225
- Vincent de Paul, St., heroic priest, 12-3069
- Vinci, Leonardo da, and flying-machine, 1-174; 22-5310
 in Rome, 18-5102
 Italian painter, 2-761, 763, 764, 5-1172
- Vine, see Vienna, history of
- Vine-chaser, injurious insect, 12-3303
- Vinegar, alcohol turns to, 7-1591
 microbe that makes, 4-821
- Viney, grapes grown in, 2-455
- Vineyards, in France, 2-420
- Vinland, location of, 2-271
- Viola, Shakespearean character, 2-445
- Viola, a flower, 22-5227
- Violet, flower, 2-432; 4-724; 6-1602; 8-2140; 12-4185
 national flower, 22-5227
 perfume from, 2-432
 state flower, 22-5227-16

GENERAL INDEX

- Violet**, various kinds of, 11-2380, 13-5046-57, 20-5329
 see also Adder's tongue, Dames violet, Water-violet
- Violet**, a color, 3-1951, 10-2696, 17-4523
 in fire-flame, 22-5892
 light waves of, 1-166 20-5243
- Violet-family**, of plants, 16-4135
- Violin**, music of, 18-4907-08, 5057
 notes of the, 7-1791, 10-2652, 16-4095
 strings of, 15-4001
 value of the body, 14-3774
 see also Mute
- Violoncello**, introduced, 12-3049
- Viper**, and the villager, 13-3370
 hibernation of, 24-6374
 horned, 6-1384
 poisonous serpent, 6-1380 1384 85
- Viper**, villager, et la, 21-532
- Viper's bugloss**, a word, 17-4152
- Viseo**, nest of, 7-1762 13-316, 22-5751
- Virgin**, Latin port, 1-76 2-34 17-4536, 20-5280, 5308 0
- Virgiliae**, see Iliad
- Virgin**, constitution of the, 10-679 2613
- Virginal**, see Spinnet
- "Virgin, Assumption of the," paintings**, by Titian, 5-1176
- Virginia**, and France, 24-6 20 6212
 and convention, 6-1391
 and Northwest Territory, 7-1834
 approved constitution, 6-1332
 capital of, 6-1332
 cedar of, 13-385
 claims of, 2-528 4-896
 flower of, 22-5816
 grant of, 4-535
 history of, 2-521 330 503 5-1111 9-1377
 Indians of, 1-421
 non industry in, 22-588
 was for Sunday, 4-561
 Mother of the Presidents, 6-1 7-1810
 9-80 238
 name of, 2-551 4-1 107 21 110 24-6 71
 claim, 10-116
 succession of, 8-2011 2016 13-3402 23-1 7
 settlers in, 7-18
- Virginia**, ship, see Merrimack ship
- Virginia Company**, and America, 2 21-187
- Virginia Military Institute**, history, 23-1 7 38
- "Virginian," by Walter**, 6-1661
- "Virginians," by Thackeray**, 13-4122
- Virginia Reel**, dance, 4 16
- Virginia, University of**, story of, 17-1 11
- Virgin Islands**, in United States, 8-117 21 5
- Virginians**, 13 113
- Virgin of the Rocks**, picture, 1 De Vries, 17 1
- "Virgin Queen," Elizabeth**, Queen
- Virgin Rock**, 20 1 76
- Via**, medium, 1 14-1 3 9 68
- Viscacha**, in animal, 3 9 68
- Vision**, and the brain, 15-581
 of, 1 15 50
 film, 15-582
 cells of, 17-41 7
 defects of, 22-572
 importance of, 16-1259
 of birds, 14-491
 of culture, 16 18-1696
 perception of, 20-537
 range of, 9-453
 rapidity of, 13-3386
- Vision**, of Constantine, 2-512 20-3394
 of St. Helena, 20-5384
- "Vision of Piers Plowman," a poem**, 15-3911
- Vie medicatrix naturae**, meaning, 6-1460
- Viola River**, in Europe, 11-2761
- Visualizing**, process of, 10-4999
- Vitality**, of body, 10-2618
- Vitellius**, claimed Roman Empire, 2-339
- Viti Levu**, Lake, sharks in, 10-2694
- Vittoria**, defeat of, 12-3141, 3346
- Vladimir**, ruler of Russia, 14-3723
- Vladimir, Prince**, character in, 1 and of Youth, 8-2061
- Vladivostok**, Russian port of, 14-3729 15-3798, 3804
- Vodka**, and Russia, 15-3806
- Vogel**, Frau Henziotte, and Von Kleist, 13-3396
- Vogelweide**, a wood, 13-3393
 see also Wither von der Vogelweide
- Voice**, break of boy's, 10-4879
 cause of beautiful, 22-5726
- Voice**, control of, 15-4001
 in empty hall, 7-1655
 of sea animals, 4-1074
 pictures of, 16-4082, 22-5754
 production of, 20-6333, 6355
 sound of, 10-4871
 that came from a rock, 10-2568
 toy to disguise, 22-6170
 use of, 16-4092
 with hands over ears, 7-1655
- Voice**, of a verb, 12-3276
- Voice-box**, see Larynx
- Voice-cords**, see Cords, vocal
- "Voice of the Night," by Longfellow**, 6-1614
- "Voice of the People," by Glasgow**, 6-2101
- "Voices of Nations in Song," collected by Herder**, 13-3396
- Volatile**, meaning of, 12-3147
- Volcano de Agua**, in Guatemala, 17-1406
- Volcanoes**, burning mountains, 1-5, 2-489, 10-2543
 formula of, 12-2551 51 18-3901
 in Iceland, 9-416
 in the United States, 1 11
 on the moon, 9-5707 12-3044 3229 23-6215
 summit stone from, 12-304
 who lighted, 8-2081
- Vole**, various kinds of, 3-807 08
- Volga River**, in Russia, 10-2601 14-3721 15-3802, 3804
- Volley**, in tennis, 17-4371
- Volplane**, a form of flight, 1-177
- Volta, Alessandro**, Italian scientist, 8-2788, 17-1411 12
- Voltaire**, and French Revolution, 10-4099 4106
 French writer, 10-2552 20-5312
- Volunteer Park**, in Seattle, 10-2687
- Von Kleist**, inventor, 8-2163
- Vorst, Cornelius**, and the Uhlans, 20-5291
- Vorst, Dirck**, and beer, 20-5394
- Vortex-box**, for smoke rings, 10-4718
- Vortex-ring**, a smoke ring, 13-1427
- Vosges Mountains**, in Europe, 9-2416, 11-2768
 was in, 10-98
- Vote**, in Africa, 11-906
 responsibility of, 17-4469
- Votive Kirche**, in Vienna, 11-2899
- Vowel-flame**, behavior of, 19-5062
- Vowels**, and sound, 16-4036 19-6060
 words containing all, 13-4439
- "Voyage of Life," paintings by Cole**, 10-4220
- Vulcan**, god of fire, 1-71 78 8-2081
 Orion and, 13-37
- Vulcan**, possible planet, 9-2459
- Vulcanite**, form of rubber, 14-3570 22-5794, 87
- Vulcanizing**, process of, 11-2711 22-5794
- Vulture**, ship, 15-7900
- Vultures**, flesh eating birds, 7-1893, 1897, 1897, 9-3312

W

- Wabasha**, wizard of, 10-4421
- "Wacht am Rhein," German national song**, 11-2768
- Wading-birds**, varieties of, 9-2341
- "Wae's Me for Prince Charlie," song**, 14-3770
- Wages**, high and low, 11-2711
 problem concerning, 5-1101
 record of time for, 6-1511
- Waggon**, a constellation, 10-2645
- Waggoner**, a constellation, 10-2639, 2643, 2645
- Wagner, Richard**, German musician, 18-4286, 4283 4 14
- Wagons**, called pirate schooners, 23-6057
 manufacture of, in United States, 10-2693
- Wagtails**, birds, 9-221-, 2-21
 egg of, 7-face 1760
- Wahbagwannee**, the water lily, 5-1111
- Wain, Charles**, see Great Bear
- Wairoa River**, in New Zealand, 6-1488
- Walrus**, of a ship, 13-1819
- Wake Island**, American, 8-117
- Wake-robins**, see Cuckoo pint Trillium
- Waking**, in the morning, 2-311
- "Walden," by Thoreau**, 6-1618
- Walden Pond**, Thoreau at, 6-1618
- Wales**, alcohol and children in, 21-5416
 birds of, 7-1640
 girl of, 20-5347
 history of, 1-128, 210 2-769-70, 774 9-1951
 national plant of, 22-5816
- Wales, Prince of**, origin of title, 7-770
- Walk**, how fast do you? 8-2356
- Walker, Admiral**, attacked Quebec, 3-559

GENERAL INDEX

- Walker, E. O.**, painting of Lyric Poetry, 7-1688
Walker, Helen, who walked to London, 9-2336
Walker, Morado, American painter, 16-4253,
 4327
 picture of Habitants, 20-5298
Walker, John, matches of, 3-811; 9-2428
Walking, in sleep, 1-167
 in straight line, 22-6165
 in the water, 11-2726
 without toes, 10-2470
Walking-stick: see Stick-insects
Wall, garden on, 23-6010
Wall, garden on, 23-6010
Hadrian's, 2-540
 of Antonine, 2-541
 of Jack's house: see Jack, house of
 plants on a, 13-3514
 push of a, 12-4812
 Roman in Great Britain, 1-210, 213
 slimy, in "Water Babies," 15-3838
 stains on, 21-5644
 the great, of China, 1-125
 wooden, of England, 4-1043
Wallaby, an animal, 4-877; 11-2834
Wallace, Dr. Alfred Russel, naturalist, 4-865,
 870
Wallace, Lew, American author, 2-274, 17-4348,
 20-5257
Wallace, Sir William, monument to, 3-770,
 12-5047
 Scottish hero, 1-126, 128, 123
Wallachia, history of, 12-3194; 13-3240
Wall-harley, a grass, 8-1345
Wallenstein (Albrecht E. von), Austrian
 general, 12-2558
Waller, Edmund, poems: see Poetry Index
Wallflower, a plant, 12-3225; 14-3644, 16-4131;
 20-5128
Wall-marbles, a game, 19-5122
Wall-paper, patterns of, 17-4526
 poisonous, 21-5629
Wall-pepper, a plant, 17-4349
Wall-rock, making, 10-2518
Wall Street, in New York, 19-5010
Walnut, black, 2-2008; 21-5431, 5434, 5438
 Burbank's, 14-3560, 3563, 3565
 European, 14-3748
 how to know wood, 19-5034
 shells of, 11-2725; 15-3900
 value of, 6-1986-97
 see also Butternut
Walpole (Sir Robert), English statesman,
 2-1114
Walpurgis Night, legend of, 16-4239
Walrus, an animal, 4-1066, 1076
 teeth of, 21-5456
Walrus, ship, 14-3636
Walrus, Sister Dora and, 2-333
Walter, character in "Canterbury Tales," 2-493
Walter, the Fearless, head of Crusade, 6-1551
Walworth, clock factories at, 6-1540
Walther von der Vogelweide, German poet,
 12-3393
Walton-on-the-Thames, battle of, 22-5912
Wamba, jester in "Ivanhoe," 7-1663
Wampanoag, Indian tribe, 1-21; 4-894, 23-6117
Wampolder Hof, legend of, 16-4239
Wampum, shells, 1-20
Wand, self-suspending, 12-3216
 wizard's, 12-3114
Wandering Jew, story of, 3-800
Wandy, a child, 23-6025
Wapiti, in "Old Mortality," 7-1776
Wapiti, North American deer, 2-412
Was, and arbitration, 12-3238
 and Congress, 6-1436
 fresco of, 7-1686
 Gallic, 20-5280
 good in, 21-5515
 Indian, 10-2576
 necessity of, 24-5515
 painting of, 7-1688
 Phoenician: see Wars, Punic
Warbeck, Richard, pretender to English throne,
 12-3140
Warble-ay, injures cattle, 12-3305
Warblers, small birds, 9-2846; 12-3464
War-bonnet, Indian, 7-1894
War-chief, Indian, 1-18
War, character in "The Virginians," 12-3420
War, Herbert, American writer, 2-2101
War, John Q. A., American sculptor,
 12-4670-71; 15-5017
War Department Building, 7-1692
Wardour, Sir Arthur, character in "Antiquary,"
 7-1668
Wardour, Isabel, character in "Antiquary,"
 7-1668
Wards, of a key, 24-6359
Wards, open-air, 12-4627
War-eagles: see Sea-eagles
Warehouses, cold-storage, 14-3764
War Hawks: see Clay, Henry, Calhoun, John C
Warmth, source of our, 23-5993
 see also Heat, of the body
Warner, Charles Dudley, in Hartford, 2-2097
Warner, O. L., American sculptor, 12-4675
Warner, Seth, during the Revolution, 4-1000,
 7-1832
Warner, Susan, American writer, 2-2099
Warner, Sir Thomas, English adventurer,
 23-6048
Warning, a game, 3-618
War of 1812, and Washington, 2-401
 history of, 3-758; 6-1398; 7-1836-37, 1841;
 12-3006; 13-3490
 salt-petre supplies, 5-1305
War of the Spanish Succession: see Spanish
 Succession, war of
Warp, of cotton, 19-4891-92
Warping-machine, for thread, 12-4891
Warrant-officer, of navy, 23-6214
Warren, in "Barnaby Rudge," 11-2777
Warren, ship, 21-5617
Warrington, George, character in "Pendennis,"
 and "Virginians," 13-3419, 3519
Warrington, Harry, character in "The Virgin-
 ians," 13-3419
Warrington, Sir Miles, character in "Pendennis,"
 13-3519
 character in "The Virginians," 13-3423
Warrington Manor, in "The Virginians,"
 13-3423
Warrior, of India, 7-1717
Warrior's Path, of Indians, 24-6253
Warroch Point, in "Guy Maunier," 6-1626
Wars, characters in "Blue Bird," 22-3838
War Savings Stamp, what it is, 23-5996
War, Secretary of, duties, 6-1436
Warsaw, capital of Poland, 16-3796, 3798
Wart-hog, variety of pig, 2-411
Warton, Thomas, 16-4157
Warwick, Dowager Countess of, 18-4724
Warwick, Earl of, 5-1356
Wary Will, steward in story of "Grey and
 White Castles," 7-1903
Wasco County, in Oregon, 10-2876
Wash, putting on a graduated, 13-1331
Wash, The, and treasure of King John, 3-59
Washing-soda: see Sodium carbonate
Washington, Booker T., negro leader 11-2412,
 23-5960
Washington, George, administration of,
 13-3488-89
 and canals, 12-4766
 and corporal, 20-5383
 and flag, 21-5493
 and Elizabeth Patterson, 19-4945
 and the White House, 2-393
 and third term, 6-1435
 and trouble with France, 12-4006
 as president, 6-1394, 1176; 9-2382, 2-1735
 at levees, 2-398
 chose site of capital, 7-1692
 during French and Indian War, 4-896-98
 during the Revolution, 4-1001, 1002, 1003,
 1008-09
 farewell to officers, 6-1390
 headquarters of, 6-1615
 home of, 3-781
 inauguration of, 6-1392-93; 12-5010, 5013-14
 life of, 3-779-81, 6-1394
 messenger of the French, 4-896-97
 portraits of, 2-402; 7-1684; 16-4214,
 4216
 resignation of, 6-1390
 statues of, 6-1392, 12-4665, 4668, 1870;
 19-5010-11, 5017; 23-5956
 Thanksgiving Proclamation, 17-4467
 see also New York, what one may see in
Washington, Major George, character in "The
 Virginians," 12-3420
Washington, Lawrence, brother of George,
 3-779
 manager of Ohio Co., 4-896
Washington, Martha G., and the White House,
 2-393
 as hostess, 2-398
Washington, Colonel William, at Cowpens,
 4-1007
Washington, ship, 12-4768

GENERAL INDEX

- Washington Arch**, in New York, 3-612; 19-5011, 5013-14
- Washington City**, capital of United States, 7-1684-85; 13-3490
- Washington College**, Va., Lee as president, 17-4467
- Washington County**, of North Carolina: see Tennessee
- "Washington Crossing the Delaware"**, painting, by Leutz, 16-4220
- Washington District**: see Tennessee
- Washington Heights**, in New York, 19-5014
- Washington Monument**, in Washington, 7-1691
- Washington, Mount**, in White Mountains, 1-10; 2-520
- Washington's Birthday**, celebration of, 17-4463-64
- Washington Square**, in New York, 19-5013-14
- Washington State**, admitted, 13-3494
- flower of, 22-5816
- fruit in, 3-661; 22-5714
- timber in, 3-2387; 22-5717
- volcanoes in, 1-13
- Washington, University of**, in Seattle, 17-4574
- Washoe Reduction Works**, for copper-ore, 10-2885
- Wasp**, an insect, 3-816; 11-2853, 2857, 2859, 2860; 12-3194, 19-4956
- and its poison, 19-5023
- sting of, 9-2334
- story of, 11-2849
- vision of, 16-4262
- Wasp, ship**, 6-1398, 12-3008
- Watanga Association**, and Tennessee, 7-1934
- Watch**, as a compass, 18-4826
- for telling time, 6-1537-38, 1542
- in America, 6-1510
- in Switzerland, 12-2992
- power of, 20-5173
- problem concerning, 2-491; 4-941
- repeater, 6-1538
- see also Chronometer
- "Watchers of the Trails"**, by Roberts, 16-4327
- Watchful**, character in "Pilgrim's Progress," 5-1185
- "Watch on the Rhine"**, German national song, 14-3772
- Watch-tower**, of Jack's house: see Jack, house of
- Water**, character in "Blue Bird," 22-5836
- Water**, a glass of, 3-733, 8-2111
- action of, 2-124, 128
- air dissolved in, 14-3781
- and growth of flowers, 16-4013
- and heat, 13-3351, 3506, 14-3572, 3776; 16-4084, 4110, 4231, 4313, 17-1370, 1501-04, 4584; 19-4877
- and oil, 1-13
- and temperature scales, 14-3673, 17-4501
- as a supporting medium, 14-3568
- as food, 11-2729
- as standard for weights, 15-3825
- behavior of, 1-164, 170
- behavior when falling into, 13-3410
- bends light, 4-1084
- big jar of, 21-5178
- birds hide under, 8-1971
- blocks railways, 2-311
- boiling, 2-519, 14-3673, 3781, 16-1085-88, 4273
- breathing under, 14-3781
- burning of, 19-5024
- cannot penetrate skin, 8-1922
- carrying, 15-4015
- clings to hands, 14-3685
- cohesion of, 3-607, 613
- colors on bad, 8-2011
- composition of, 7-1693-95
- contents of, 11-2910
- crackling of, 12-3149
- cracks hot glass, 4-1086
- currents of, 4-1082-83
- density of, 3-566-67; 4-914
- distribution of, 12-3032
- drops of, 6-1567, 9-2333; 10-2537
- evaporation of, 6-1588; 9-2250; 10-2537; 12-3148; 22-5873
- expands when frozen, 14-3684
- experiments with, 22-5921
- fern in the, 11-2726
- floating on, 12-3150
- for cleansing, 16-4272
- for hydraulic elevator, 23-6198
- forms of, 6-1164
- freezing of, 14-8673; 16-4085; 17-4584; 19-4877
- gases of, 5-1242-44
- great marvel of, 8-1189
- gurgling of, 14-3774
- hard and soft, 6-1583
- height of rise in pump, 13-3978
- in air, 4-919, 920
- in animals, 3-574
- in clouds, 13-3391
- in fountain, 3-663
- in Holland, 14-3550
- in other worlds, 13-3388
- in rainbow, 7-1677
- in revolving pail, 15-4020
- in soap-bubble, 7-1795
- in sweat, 8-1924
- in the eye, 13-4022
- in tunnels, 24-6260, 6265
- in volcanoes, 8-2084
- life in, 3-547, 571
- life-saving in, 8-1362
- machinery for raising, 21-5415
- made by electricity, 8-2166
- molecules, 6-1582
- necessity for, 23-6109
- none in the sun, 13-3388
- not an acid, 7-1813
- on barren-land, 21-5414
- on planets, 12-3125
- petrifies wood, 20-5292
- photograph of, 16-4234
- plants growing in, 10-2582, 15-3812
- pressure of heat, 13-3506
- problem concerning, 3-736
- produced by burning, 16-4110, 19-5025; 24-6309
- purity of, 17-4585
- quenches fire, 7-1791
- reflections of, 12-3045; 13-3511
- resistance of, 14-3674
- ripples and stone, 4-1081
- scarcity of, in Australia, 6-1372
- sealing through, 5-1284
- sewage in, 4-907
- sound over, 10-2471
- splashing of, 22-5873
- surface of, 14-3778
- swimming in salt and fresh, 8-2011
- tasteless, 14-3685
- temperature of, 13-3390
- things soluble or insoluble in, 15-3911
- three cups of cold, 2-475
- transports seeds, 15-3890
- treading, 15-3898
- tricks with glass of, 23-6168
- waves of, 4-1081-83
- weight of, 17-4371
- what it is, 2-375, 4-956, 958, 1031
- where it comes from, 6-2115
- why does it boil? 2-519
- Water-avens**, a plant, 19-4951, 4952
- "Water Babies"**, by Kingsley, 6-1462; 15-3831
- Water-bed**, of the spine, 10-2468
- Water-beetle**, an insect, 9-2334; 12-3194; 13-3303
- Water-birds**, varieties of, 9-2340
- Water-bon**: see Anaconda
- Water-bug**: see Croton-water bug
- Waterbury**, time-pieces in, 6-1540
- Water-carrier**, a constellation, 10-2643
- Water-carriers**, of Egypt, 23-6183
- Water-clock**, for telling time, 6-1542
- Water-cress**, salad plant, 15-3889; 19-4953, 4956
- Water-crowfoot**, 19-4946-47
- Water-elder**: see Guelder-rose
- Water-fairies**, Queen of the, character in "Water Babies," 15-3855
- Waterfalls**, picture, 2-431
- Waterford**, canal-locks at, 13-4769-70
- Water-gas**, in gas-making, 2-416-18
- Water-hens**, birds, 8-1970, 1972
- Watering can**, for garden, 1-249
- Water-lily**, Indian story of, 8-1111
- various kinds of, 19-4946, 4948
- Water-lily**: see Liliæ, Plimsoll's
- Waterloo**, battle of, 2-360; 3-793; 5-1112-13, 1115; 8-2389; 10-2594; 14-3548; 17-4365-68; 21-5628
- Napoleon after, 13-3500
- Waterman, L. M.**, and fountain pens, 22-5875
- Water-mill**, for grinding heat, 8-1137
- Water-mole**: see Duck-bill
- Water-nymph**: see Undine
- Water of life**, search for, 17-4409
- Water-pheasant**: see Jacanas
- Water-pipes**, 8-2120, 2126

GENERAL INDEX

- Water-plantain**, aquatic plant, 19-4950, 4952
Water-poet: see Taylor, John
Water-power, in Bulgaria, 13-3212
in Germany, 11-2769
in New England, 10-2688
in Switzerland, 12-2992
use of, 10-2682
Waterproof, what it means, 3-693
Waters, world in the, 9-2405
Water-scorpion, habits of, 13-3361
"Water-Seller," a picture by Velasquez, 3-764
Water-shrew, an animal, 3-685
Waterside, plants of the, 15-3890
Water-snake, a reptile, 6-1384
Water-soldier, aquatic plant, 19-4948
Water-spider, habits of, 13-3359, 3363
Water-spout, cause of, 10-2471, 23-5990
Water-sprite: see Kuhlhorn
Water-supply: see Irrigation
Water-thyme, aquatic plant, 7-1739; 19-4948
Water-tower, for fires, 22-5757, 5768
Watertown, people settled Vethersfield, 2-532
Water-vapor, and clouds, 19-1878
and heat, 14-3680, 16-1311; 17-4501-03
and night mists, 14-3572
before rain, 14-3778
called steam, 14-3776
condensation of, 17-4371; 21-5408
in air, 17-4486
in breath, 9-2248
in flame, 9-2248
produced by burning, 18-4693
what it is, 6-1583, 1588, 16-4083-84, 4086
Water-violet, a plant, 19-4957
Water-wheel, for irrigation, 21-5116
Watkins, Sally, character in "John Halifax," 15-3369
Watling Street, Roman road, 2-170
Watling's Island, in Bahamas, 23-6011
Watson, Sir William, English scientist, 8-2161, 2164, 17-4442
Watt, James, and steam-engine, 3-600-01, 603, 665; 10-2491-92; 17-4389
Watteau (Jean A.), French artist, 17-4591, 4598
Wattles, of birds, 6-1508, 7-1897-98
Watts, G. F., English painter, his picture of Sir Galahad, 4-887
Watts, Sir Isaac, hymns of, 8-2014, 2017
poems: see Poetry Index
Waugh, Edwin, poems: see Poetry Index
"Wave of the Sea and of Love," by Grillparzer, 13-3398
"Waverley," story of the novel, 6-1495, 1497; 9-2323
Waverley, Edward, character in "Waverley," 6-1494, 1498
Waverley, Sir Everard, character in "Waverley," 6-1498
Waverley, Mistress Rachel, character in "Waverley," 6-1498
Waverley, Richard, in "Waverley," 6-1498
Waverley-Honour, in "Waverley," 6-1498
Waverley Novels, by Scott, 6-1495; 7-1663; 8-2324
Waves, behavior of, 19-5062
caused by moon, 12-3145
curling and breaking of, 15-1024
of snow, 10-2534
the seventh wave, 9-2250
tidal, 9-2295
see also Air, Light, Sound, Water, etc.
Wawa, a savage, 23-6017; 24-6287, 6340
Wawona Tree, 4-915
Wax, for grafting, 22-5896
from crude-oil, 16-4169
gives smooth finish, 13-3147
manufactured by bees, 11-2852
of bees, 11-2730
of eeg, 15-3915
vegetable, 20-5219
Wax-moth: see Bee-moth
Waxvetas, General, and his family, 2-490
Waxwing, a bird, 7-1757
Waxworks, Mrs. Jarley's, in "Old Curiosity Shop," 11-2774
"Way Down Upon de Swane Bibber," by Foster, 12-3051
Wayfaring-tree, flowers of, 15-4016
Wayne, Anthony, portrait, 4-1001
Weapons, of Indians, 10-2576
prehistoric, 5-1316; 23-6019
stone, 11-2919
Weapon-show: see Wapinschaw
"Wearin' o' the Green," song, 14-3771
Weasel, an animal, 1-157, 160; 3-808; 21-5574
Weather, foretelling the, 8-2034; 10-2536
how to study, 12-2993
name for the science of, 10-2536
seaweed and, 20-5174
see also Barometer
Weather Bureau, work of, 6-1437
Weather-glass, chemical, 17-4388
see also Barometer
Weatherly, Frederic E., poems: see Poetry Index
Weather-vane, action of a, 23-5989
making a, 12-2993; 21-5642
Weaver, and cloth, puzzle, 9-2271, 2356
foreign in England, 4-1042-43
in "Canterbury Tales," 15-3939
Weaver-birds, nests of, 7-1753, 1758, 1760, 22-5748-49
"Weavers," by Parker, 16-4327
Weaving, in Venice, 5-1168
Webb, Captain, swam Channel, 16-4314
Weber (Baron Karl M. F. E. von), German composer, 13-3294
Webe, of animals, 14-3568
of fingers and toes, 10-2573
see also Spider-webs
Webster, Daniel, American statesman, 3-665, 10-2438, 2440-42; 20-5399
statue of, 18-4668
Webster-Ashburton Treaty, about Canadian boundary, 13-3491
Weddell, English navigator, 21-5164
Wedding, a Scotch, 21-5625
Wedding-feast, the princess's, 19-4120
Wedding-rings, why do women wear, 6-1416
Wedge, and the ape, 23-6133
Wedgwood, and Flaxman's reliefs, 16-4171
Wednesday, name of, 1-94; 2-466
Weeds, in cabbage-family, 16-4134
poisonous to animals, 21-5665
roadside, 16-4205
seeds of, 9-2345
travels of, 15-3889
use for, 3-617
Week, a paper, 16-4327
Week, what it is, 1-91
Weevils, various, 12-3203-04
see also Boll-weevil
Weft, of thread, 19-4891
Wery, Elias, character in "Our Mutual Friend" 10-2462
Wegmann, F., roller-mills of, 11-2717
weighing-machine, for flour, 5-1139
Weight, explanation of, 3-586-67, 15-3825
measurement of, 14-3672-73
of falling bodies, 7-1679
of hot or cold matter, 14-3730
of magnetized matter, 14-3779
of things, 12-3236; 14-3591
unit of, 14-3673
use of, 3-607
Weights, of a clock, 6-1537
systems of, 14-3673
Weimar, Duke of, and Goethe, 20-5313
Weimar, and German writers, 13-3395, 3397
Weir, J. Alden, American artist, 16-4253, 4258
Weka-rails: see Wood-hen
Welland Canal, in Canada, 1-228; 5-122; 9-2278
Weller, Sam, character in "Pickwick Papers," 9-2320; 10-2456-57
Weller, Tony, character in "Pickwick Papers," 9-2320; 10-2457
Wellerism, what it is, 10-2459
Welles, Gideon, Secretary of the Navy, 8-2010
Wellesley, Sir Arthur: see Wellington, Duke of
Wellesley, Marquis of, governor-general of India, 17-4366
Wellesley College, for women, 17-4570
Wellington (Arthur Wellesley), Duke of, and Elizabeth Patterson, 19-4945
and the water-seller, 3-662, 764, 5-1112, 1115
at Waterloo, 9-2289; 10-2594
in Portugal, 9-2288
in Spain, 9-2289, 13-3341, 3346
life of, 5-1330; 17-4359, 4365-68
puzzle-picture, 4-930
tomb of, 19-5047
Wellington City, of New Zealand, 6-1490, 1492
Wellington Memorial, by Stevens, 16-4174
Wellington Province, of New Zealand, 6-1490
Wellman, Walter, exploring part of, 8-2036
Wells, M. T., painted picture of the telling of Victoria that she was queen, 5-1117
Wells, Horace, and nitrous oxide, 18-4632

GENERAL INDEX

- Wells, for water, 8-2125
in Australia, 6-1372
making, 8-2116
of spoils, 17-4386
salt made from, 1-241
Wells College, and Frances Folsom, 2-403
Welsbach-light, 2-416
Welsh, and Briton, 9-2424
in Canada, 14-3732
national song of, 14-3772
Wenceslas, the good king, 4-922, 924
Wendy, costume for, 20-5346
Wener Lake, in Sweden, 14-3660
Wengern Alp, in Switzerland, 22-5846
Wentworth, explored Australia, 2-365
Wentworth, Earl of, tyranny of, 21-5556
Wentworth, Lady, portrait by Copley, 16-4218
Wentworth, Thomas, English parliamentarian, 7-1862, 1864
see also Strafford, Earl of
Wenzel, 11-2902
see also Wenceslas, Good King
We're Here, a boat, 20-5373-75
Weser River, in Europe, 10-2550; 11-2764
Wesley, Charles, hymns of, 8-2014, 2017
poems: see Poetry Index
religious reformer, 5-1120
Wesley, John, hymns of, 8-2014, 2017
religious reformer, 5-1120
Wessex, kingdom of, 2-465-66; 15-3935; 16-1077
wisest maid in, 9-2316
West, Benjamin, American painter, 16-4215-16
West, Charles, and cable, 10-2491
West, story of, 22-5711
the growing, 7-1831
West Academic Building, at West Point, 18-4737
Westchester Hills, a picture by Martin, 16-4248
Western Australia, caves in, 6-1377
history of, 6-1374
Western Ghats, mountains, 6-1632
West Florida: see Florida, history
West Indies, animals of, 4-876
birds of, 9-2338, 2343
British Islands, 6-2052
Danish, 14-3658
French Islands, 4-900; 9-2426
fruit in, 3-650; 15-3901
history of, 1-7, 64, 2-272; 4-1011; 5-1113; 12-3006, 17-4361
inhabitants of, 8-1930
insects of, 13-3298
islands of, 23-6041
land crabs of, 10-2611-12
naming of, 17-1164
prawns of, 10-2615
sponges and, 16-1267
sugar in, 3-702, 707
Tobacco in, 6-1390
United States trade with, 6-1392
woods of, 19-5034, 5039
see also Cuba, Virgin Islands, etc.
Westinghouse, George, air-brake of, 11-2716
West Jersey, part of New Jersey, 2-529
Westland, province of New Zealand, 6-1190
Westlock, John, character in "Martin Chuzzlewit," 10-2675
Westlock, Ruth, character in "Martin Chuzzlewit," 10-2675
Westminster, Abbot of, and Caxton, 15-1938
Westminster, Archbishop of, character in "Table Round," 4-882
Westminster, Canon of, 9-2328
Westminster, Dean of: see Buckland, William
Westminster, Canadian city, 22-5782
Westminster Abbey, and Caxton's printing-office, 4-881; 14-3612-13
building of, 2-472-73; 5-1253, 1258, 1261
history of, 3-590-96, 769-70, 773-71, 4-859, 1040; 5-1120; 8-2072; 16-4090
Queen Elizabeth (wife of Edward IV) and, 9-1992
tales of, 18-4681
see also Henry VII, chapel of, Poet's Corner, Westminster Hall
Westminster Bridge, 3-667
Westminster Gazette, "John Bull" in, 9-2352
Westminster Hall, in London, 3-597; 4-1034, 1039
Westmorland, history of, 3-592
Westphalia, Jerome Bonaparte, as king of, 19-4942, 4944
peace of, 10-2559; 12-2988
West Point, N. Y., academy at, 18-4738-39
Arnold and, 15-3920
West Virginia, admitted, 8-2046, 2057; 19-8498
coal in, 10-2680
flower of, 22-5816
history of, 23-5957
iron industry in, 22-5688
land surveyed in, 4-896
petroleum in, 10-2680; 16-4166
"Westward Ho!" a painting, 7-1686
"Westward Ho!" by Kingsley, 9-2328; 14-3712-13
West-wind, spirit of the, 12-3210
Westwood, Thomas, poems: see Poetry Index
Wethersfield, Conn., settled, 2-532
Wetterhorn, mountain in Alps, 22-5843, 5846
"We Won't Go Home Until Morning," and "Mulbrough," 14-3772
Wexford, Ire., and Cromwell, 7-1859
Weyler, General, and Cuba, 8-2154
Whale, a constellation, 10-2643
Whale, a sea-animal, 1-152; 2-377; 3-672; 4-1067; 9-2349-50
battle with a squid, 10-2484
bravery of, 21-5610
hunting, 15-4060
limbs of, 10-2164
neck of, 10-2167
picture of imaginary, 1-215, 220
skin for leather, 11-2834
sperm-oil obtained from, 3-669
see also Beluga
Whale-bone, what it is, 4-1068
Whale-head, a bird, 8-1976
Whales, Bay of, in antaretic, 21-5464
Wharton, Edith, American writer, 8-2103
Wheat, and canal, 18-4766, 4768
and chinch-bug, 12-3205
and price of bread, 20-5178
as food, 11-2917
called corn, 23-6090
elevator for, 21-5614
for bread, 5-1131-36
found with mummies, 7-1793
harvesting, 16-4149
head of, 11-2947
important cereal, 8-2085
in Argentina, 20-3363
in Australia, 6-1369, 1372, 1374
in Canada, 1-230, 9-2278, 13-3354; 21-5608
in France, 9-2420
in India, 6-1633-34
in Oregon, 5-1103
in Sweden, 14-3660
mills for, 5-1138
production of, 9-2386
reaping, 16-1150-51
time of growing, 11-2714
varieties of, 4-913
see also Couch-grass
Wheatear, a bird, 8-2107, 2110
Wheatstone, Dr. Charles, English physicist, 17-1111, 1114, 4116
Wheel, and oil, 18-4695
construction of, 4-920
for catching fish, 15-3953
going round of, 3-693
of a boat, 18-1618
of a clock, 6-1537, 1539
of engine, 1-301, 3-694
of St. Catherine, 4-1026-27
potter's, 17-4541, 4543-45
seeing spokes of spinning, 19-5026
speed of, 3-694, 813
stopping of, 3-693
turning of, 23-6084
see also Ferris-wheel
Wheelbarrow, for gardening, 1-249
Wheelbarrow-race, a human, 16-4292
Wheldrake, Church of St. Helena at, 20-5384
Whell, sea-anemone and hermit-crab, 9-face 2404, 2410
shell-fish, 6-1420, 1424, 1426-27; 10-2611, 2617-18
"When the Eye Comes Home," song, 14-3770
Whey, albumins of, 17-4585
of milk, 11-2828
Whigs: see Party, Whig
Whimbrels, birds, 8-1978-79
Whinchat, a bird, 8-2107
egg of, 7-face 1760
Whipper, Father: see Fouettard, Le Père
Whipping-stitch, in sewing, 3-622
Whip-poor-will, a bird, 7-1764; 8-2343; 13-3456
egg of, 7-face 1766

GENERAL INDEX

- Whirlpool**, in a tumbler, 22-5741
 what makes a, 18-4811
Whirlwind, box that makes a, 5-1304
 cause of, 23-5930-91
Whiskey, and warmth, 21-5638
 contains ethyl-alcohol, 7-1890
 direct tax on, 6-1391
Whisky-Jack, a bird, 13-3456
Whisper, heard in Capitol dome, 15-4021
Whistle, sound of, 11-2739, 19-4872
 that a boy can make, 15-3902
Whistler, James McN., American painter, 18-1248, 4253
White, John, artist, 24-6272
White, Stanford, pedestal of Farragut statue, 18-1671
White, Stewart Edward, American author, 6-1621
White, and heat, 17-1372
 in flag, 20-5397, 5491
White-bait, fish, 10-2601-06
White-beam, of Europe, 14-5330; 16-4134
White Captive, a statue, 18-1667-68
"White Cat", authorship of, 6-1178
White City: see Chicago, World's Fair
White Crown, farm of, in "Abbé Constantine," 18-1751
Whitesh, of Great Lakes, 10-2701, 2704, 15-3813, 3936
White Fish Bay, Baltimore at, 23-6120
"White Girl", picture by Whistler, 16-1218
Whitehall, and British navy, 11-frontis
Whitehall, London street, 5-1261, 14-3573
Whitehall, Palace of, history, 4-1023, 7-1339
White Hart Inn, in "Pickwick Papers," 10-2, 17
Whitehaven, Eng., attacked by Jones, 12-3001
Whitehill, battle of (near Prague), 11-1991
White Horse, in Canada, 8-1816 18-1621-22
White House, burned, 2-399, 102, 6-1399
 home of president, 7-1630
 Jefferson in, 3-783
 ladies of the, 2-399
White House, of the Confederacy, 23-5959
"White-Man's Foot", the plantain, 15-3890
White Man's Grave, coast of West Africa, 22-1723
White Mountains, in New Hampshire, 2-520
White Nile, river in Africa, 16-1306
 see also Nile River
White Plains, battle of, 4-1002
White Rabbit, character in "Alice in Wonderland," 6-118, 11-2953, 12-3162-63
Whites, of Uruguay, 18-1610
White Sea, of Russia, 14-3720, 3723, 21-3156
White Ship, wrecked, 3-592, 10-2507
White Strand Bay, cable landing, 10-2196
White Swan, an inn, 5-1150
White-tails: see Deer
Whitethroat, a bird, 8-2107, 2119
White Tower: see Tower of London
White-weed: see Daisy, ox eye
Whitewood: see Thistle-tree
"Whitey", horse of General Taylor, 7-1845
Whiting, William, hymns of, 8-2015
 poems: see Poetry Index
Whiting, a fish, 10-2602-03, 15-3817
Whiteley, monastery above, 2-166, 168
Whitman, Walt, American writer, 6-1609
 1619-20
 poems: see Poetry Index
 portrait of, 16-1256
Whitney, Eli, and the cotton-gin, 7-1837;
 11-2711, 19-1881
Whittier, John Greenleaf, American writer, 6-1609, 1616, 8-2097, 12-3102
 poems: see Poetry Index
Whittington, Dick, and his cat, 2-396
Whortleberries, fruit, 17-1558, 18-4760, 4763
Whycocomagh, village of, 21-5547
Whydah, a bird, 7-1760-61
Wichita, a Kansas city, 22-5713
Wick, meaning a village, 2-465
Wicked, triumph of, 22-5872
Wickfield, Agnes, character in "David Copperfield," 11-2866
Wickfield, Mr., character in "David Copperfield," 11-2866
Wickham, Captain H. A., and rubber, 22-5795
Wicks, for oil-lamps, 3-669
"Wide, Wide World", by Warner, 8-2099
"Widow Capet": see Marie Antoinette, queen of France
Widows, in India, 6-1636
 see also Trogons
Wien, Max, and wireless, 17-4448
Wife of Bath, story told by, 2-498
Wig, and John Endicott, 2-528
 of British judges, 2-410
Wiggin, Kate Douglas, American writer, 8-2102
Wiggin, Sam E., lawyer, 8-2102
Wight, Isle of, history, 2-465-66; 7-1859;
 13-3254
Wiglaf, and Beowulf, 13-3503
Wigwam, Indian dwelling, 1-16; 10-2576
 of the dead, 5-1106
Wilberforce, and slave trade, 17-4577
Wilcox, Ella Wheeler, poems: see Poetry Index
"Wild Animals I have Known", by Seton, 6-1621, 23-6135
Wild Cat Band, of boys, 23-6136
Wild Celery, a duck food, 6-1561
Wilderness, battle of the, 8-2053
Wilderness, Hebrews in, 24-6330
"Wild Geese of Ireland", Irish soldiers, 21-5557
Wild Oats, Indian tribe, 23-6112
"Wild Swans", authorship of, 6-1478
Wilfer, Bella, character in "Our Mutual Friend," 10-2162
Wilfers, characters in "Our Mutual Friend," 10-2162
Wilfred, character in "Ivanhoe," 7-1666
 character in "Rob Roy," 6-1623
Wilhelm I, emperor of Germany, and corn-flowers, 7-1765
Wilhelmina, Dutch doll, 13-face 3134, 3438
Wilhelmina, Prussian princess, 17-1549-50, 1552
Wilhelmina, queen of the Netherlands, 14-3518
Wilhelmshaven, German port, 11-2764
Wilkes, Charles, American naval officer, 8-2156, 21-5161
Wilkes Land, in Antarctica, 21-5161
Wilkins, Dick, character in "Christmas Carol," 9-2200
Wilkins, Mary E.: see Freeman, Mary W
Wilkins, William, English architect, 5-1262
Will, and the heir, 20-5181
 depended on apostrophe, 22-5713
 last, of Charles Louisbourg, 20-5379
Will, centre of the, 14-3692
Willamette River, in Oregon, 9-3383
Willard, Emma C., and education for girls, 12-3118, 3120
 son's-will, 14-3768
Willard, Frances Elizabeth, statue of, 7-1686
Willard, Dr. James, married Thomas C. Willard, 12-3120
Willet, Joe, character in "Barnaby Rudge," 11-1, 78
Willet, John, character in "Barnaby Rudge," 11-2779
William, problem concerning, 4-830
William, son of Henry I, drowned, 3-590
William, Duke of Normandy: see William the Conqueror, of England
William, Prince, of England, 10-2507
William I, the Conqueror, king of England, and the church in England, 18-1791
 bride of, 14-3512
 fought Malcolm Canmore, 12-3134
 puzzle-picture, 4-930
 reign of, 1-127; 2-465, 171-73, 3-591-599, 5-1253, 8-2070
William III, king of England, and Adolph and Steele, 18-4726
 and Boyne, 14-3766
 and Czar Peter, 14-3721-2
 and Holland, 10-2559
 and James II, 21-5556
 character in "Henry Esmond," 13-3310
 reign of, 4-891, 1013, 21-5628
William IV, king of England, and Trafalgar Square, 5-1262
 reign of, 3-665, 5-1116-17
William I, emperor of Germany, and Cologne Cathedral, 11-2766
 bust of, 11-2769
 proclaimed at Versailles, 10-2597-2600
 reign, 11-2772
 statue of, 11-2762
William II, emperor of Germany, and Bismarck, 11-2771
 attention to army and navy, 11-2764
 reign, 10-2600, 11-2772
William and Mary, king and queen of England, reign of, 4-1043, 14-3547
William and Mary College, history of, 17-4568
 in Virginia, 3-782
William Longsword, and Richard, 20-5393
William I, of Orange, the Silent, reign as king of the Netherlands, 14-3548

GENERAL INDEX

- William I. of Orange, the Silent, first
of the Netherlands, 1-134; 20-454
14-354-45
William II, reign as king of the Netherlands,
14-354
William of Balleot, Italian physician, 12-145
William Swan, ship, 15-454
William Rufus, king of England, and the
church, 12-479
and Tower, 1-1254
built Westminster Hall, 4-1039
fought Malcolm Canmore, 12-3124
reign of, 2-553-20; 2-1547
William the King, first king of Scotland,
incidents in life of, 2-334, 12-137
Williams, character in "Tom Brown's School-
days", 16-141
Williams, Frederick M., American painter,
16-4258
Williams, Roger, and Rhode Island, 12-3120
and settlement at Providence, 2-528
Williamsburg, Va., church at, 2-1395
college at, 17-4568
Williamsburg Bridge, of New York, 1-25
Williams College, history of, 17-4568
"William Tell" by Rossini, 12-3294
"William Tell" by Schiller, 20-5313
Will-o'-the-Wisp, character in "Blue Bird,"
22-5389
is marsh-gas, 14-3569
Willoughby, Sir Hugh, English navigator,
4-569, 21-5457
voyages of, 21-5456
Willoughby, Kent, and powder-magazine, 12-4799
Willow-herb, seeds of, 15-4895
Willow-pattern, story of, 2-269
Willows, elastic, 4-921
flowers of, 11-2877
for basket, picture, 1-95
for whistles, 15-3902
various, 12-3269
Willow-wren, egg of 7-face 1760
Will-power, and health, 20-5178
Wills (William J.), explored Australia, 2-368
Wilmington, N. C., during Civil War, 2-2054
during Revolution, 4-1002
sea port, 23-5958
Willmore, Lord, character in "Count of Monte
Cristo," 17-4436
Wilson, smuggler in "Heart of Midlothian,"
7-1773
Wilson, A. B., and sewing-machine, 11-2717
Wilson, Mrs. A. M.: see Evans, Augusta
Wilson, Billy, in story, 20-5179
Wilson, Doctor, on Scott expedition, 21-5466
Wilson, Harry, in story, 20-5179
Wilson, Mr., married Augusta Evans, 2-2098
Wilson, Mr., pastor of Boston, 23-6114
Wilson, Woodrow, administration of, 13-1488,
3495
and Princeton, 17-4404
as president, 1-84, 2-2380, 2382
at Princeton, 17-4668
Winander, Boy of, 7-1688
Wind, and desert-sand, 16-1118
and rain, 22-5874
and the signboards, 21-5474
and the sun, 15-3879
behavior and whistling of, 4-1081-83
blowing of, 17-4588 22-5989
carries seeds, 15-3890-91
changes of the, 7-1886
direction of, 12-2393
hot or cold winds, 23-5990
is current of air, 12-4821
riders on the, 1-178
studied by weather bureau, 6-1437
toy to measure, 6-1699
worshipped by Indians, 1-18
see also Trade-wind, Whirlwind
winders, girls, 12-4890
wind-bowers see Wood-anemone
Windham, comment on Burke, 12-4160
Windmills, battle of, in "Don Quixote," 4-967
for grinding flour, 6-1187
of Holland, 12-4540
of La Mancha, 12-3244
of paper, 1-104; 11-4575
Windows, Arabian, 23-6108
curtains for, 22-5350
flower-bowers for, 12-1102
in Giotto's tower, 12-4797
noise breaks, 4-513
of glass, 2-1263-64, 1266-67
Windows, Arabian, 23-6108
curtains for, 22-5350
flower-bowers for, 12-1102
in Giotto's tower, 12-4797
noise breaks, 4-513
of glass, 2-1263-64, 1266-67
Windsor, and of the
Windsor, George, martyrdom of, 12-5094
Windsor, Owen, American writer, 2-1691
Windsor, and Rapsnel, 2-2310
and the tinder-box, 12-4123
legends of witches, 16-253
of the forest tree, 2-723
story of witches, 2-795
Witch-hazel, a shrub, 17-4565
Witchhazel, Martin, character in "Ghosts
and the Heart" 16-4073
Witwatersrand, gold-deposit at, 22-5313
Wizard, a modern, 22-5373
of Wabasha, 12-4231
Wizard-king, puppet of, 21-5451, 5452-24
Wood, a dye-plant, 12-4123
Woden, god of war, 1-94; 2-466, 14-3659

GENERAL INDEX

- Wordsworth, William, and Rydal, 17-1373**
English poet, 4-958, 18-4657, 23-6033
poems, see Poetry Index
- Work, Henry Clay, song of, 12-3053**
- Work, and heat, 17-4389**
of Colonial children, 4-963
value of, 21-5639
- Work-basket, making, 23-6165**
what to do with girl's, 2-489, 3-621, 730, 4-849,
939; 5-1101
- Workbox, how to make girl's, 2-487**
- Worker-bee, importance of, 11-2855**
see also Bee
- Workers, among ants, 11-2956**
- Workhouse, in "Oliver Twist," 10-2563**
- Workmen, nature's little, 3-677**
- Workshops, for aeroplanes, 1-178**
- Work through the Homes, slogan of Camp-fire
Girls, 14-3756**
- World, all discovered, 9-2352**
burning out of, 6-1413
first voyage round, 1-66
history of, 1-59
how big is, 3-613
light when the sun is behind dark clouds,
6-1587
Milky Way turning into, 7-1881
spinning of, 17-1377
see also Earth, Worlds
- "World I Live In," by Keller, 8-2103**
- Worldly Wiseman, character in "Pilgrims
Progress," 5-1126**
- Worlds, change in other, 23-5991**
collisions of, 20-6398
in the skies, 8-1959
making of other, 12-2811
number of, 16-4114
procession of the, 1-3
roundness of, 5-1165
sun's family of, 9-2388-89
- World's Fairs: see Chicago, Paris, Philadelphia,
etc**
- Worms (town), legend of, 16-159**
- Worms, backboneless animals, 3-671 14-1665**
breathe underground, 4-911
hibernation of, 24-6371
in sponge, 9-2111
in the pumpkin bean, 10-2175
life of cut, 10-2479
see also Caterpillar, Earthworm, Glow worm
- Wormwood, a plant, 16-1136**
- Worry, cause of, 21-6677**
effect on digestion, 12-4180
- Wotton, Sir Henry, poems, see Poetry Index**
- Wounds, treatment of, 18-4630 21-5528 24-6369**
see also First Aid to the Injured
- Woundworts, plants, 19-1953, 1956**
- Wrasses, fishes, 6-1421**
- Wreaths, dropped by aviators, 1-179**
- "Wreck of the Hesperus," a poem, 6-1611**
- Wren, Sir Christopher, English architect, 5-1203,
1256, 1259; 20-5206**
- Wren, Jenny, character in "Our Mutual
Friend," 10-2462**
- Wren, King, 9-2103**
- Wren, a bird, 8-2109, 2117, 9-2350**
egg of, 7-face 1756, 1760
nest of, 7-face 1760, 22-5750
various kinds of, 9-2316, 13-3163
- Wright, Edward, and Mercator's projection,
7-1767**
- Wright, Lemuel W., pins made by, 19-1001**
- Wright, Orville, and aeroplane, 1-171-75**
flying-machine of, 11-2518
- Wright, Wilbur, and aeroplanes, 1-171, 11-2518**
- Wrist, bones of, 10-2571, 2573, 16-1900**
pulse in, 16-1201
- Writers, English women, 10-2619**
famous American, 6-1609
famous German, 13-3393
great English, 18-1723
of other lands, 20-5307
of Shakespeare's time, 21-5483
of songs, 12-3619
see also Authors
- Writing, by ghosts, 22-7923**
centre of, 15-3821
cuneiform, 13-3480, 3481, 19-4964, 20-5118
demonic, 13-3482
early, 3-688; 15-3909
five new letters, 4-987
how men learned to write, 13-3479, 3482
how Tom and Nora learned, 1-261
invention of, 15-4024
- Writing, letters with loops above the lines, 5-1236**
magic, 23-6084
of the Egyptians, 18-1814, 4853
on the wall, 19-1970
pressure on down strokes, 22-5721
Tom and Nora and the pothooks, 2-455
Tom and Nora make more letters, 2-741
with pen and ink, 7-1653
with slate pencil, 7-1653
see also Picture-writing
- Writing-board, handy, 5-1095**
- Writing, School Lessons in: see Tables of
Contents**
- Writs of Assistance, in America, 6-1438**
- "Wrong, What is?" 20-5252**
- Wrought-iron: see Iron, making**
- Wu-Mang, and the mosquitoes, 23-6028**
- Wurtemberg, Duke of, and Schiller, 10-5313**
- Wurtemberg, Grand Duke of, and Jane Porter,
10-5622**
- Wurtemberg, part of Germany, 11-2769**
- "Wuthering Heights," by Bronte, 10-2625**
- Wyandottes, kind of hen, 18-4712**
- Wyant, Alexander H., American artist, 18-4247,
1249, 1251**
- Wyatt, Sir Thomas, writings of, 21-5184**
- Wyclif, John, English reformer, 3-773; 4-856;
10-2591, 11-2992, 15-3910**
- Wyoming, admitted, 13-3491**
flower of, 22-5816
purchase of, 13-3492
sheep in, 10-2678

X

- Xenon, gaseous element, 5-1319**
- Xenophon, Greek historian, 5-1320, 1326;
18-5114 20-5152, 5208**
- Xerophytes, dry-plants, 19-5085**
- Xerxes I, king of Persia, 20-5150, 5153, 5203,
5206, 5208**
- X-rays, discovery of, 24-6366**
of light, 5-1319, 20-5243
photographed key, 24-6370
- Xury, a boy, 5-1225**

Y

- Yahoos, characters in "Gulliver's Travels,"
5-1338**
- Yaks, as beasts of burden, 2-295, 15-3930**
- Yakuts, Siberian tribe, 15-3403**
- Yale, Elihu, and Yale College, 17-4568-69**
- Yale, Linus, Jr., lock-maker, 24-6358**
- Yale, Linus, Sr., lock-maker, 24-6358**
- Yale University, story of, 17-4568-69**
- Yang-su, Chinese boy, 21-5178**
- Yankee Doodle, origin of, 12-3052**
- Yaon, Emperor, and Yu Shun, 23-6028**
- Yard, unit of length, 14-3672**
- Yards, of ship, 15-3959-60**
- Yarkand, Asiatic town of, 15-3928, 3933**
- Yarmouth, Nelson at, 17-4363**
- Yarmouth, port of Canada, 1-223; 21-5546**
- Yarn, cotton, 19-1886**
of hemp, 15-1010
see also Thread
- Yarrow, a weed, 16-4208-09**
- Yasnaya Polyana, estate of Tolstoy, 20-5314**
- Yaupon, a shrub, 17-4565**
- Yawl, a boat, 15-3959-60**
- Yawn, cause of, 3-814**
why infectious, 15-3909
why is it rude to? 3-815
- Yeames, W. F., his picture of Queen Elizabeth
and the French ambassador, 4-857**
- Year, length of, 7-1876**
months of, 9-2206
telling the, 6-1537
two short years, 21-5523
what it is, 1-88
- "Yeast," by Kingsley, 9-2328**
- Yeast, effects of, 5-1131, 12-3233, 23-5991**
- Yeast-plant, a microbe, 4-821, 909; 7-1890-91**
- Yeats, William Butler, Irish poet, 23-6040**
- Yellow, color combinations of, 8-1951**
in the flame, 22-5892
of aged things, 15-3911
primary color, 10-2696
sacred color, 24-6381
waves of, 1-166, 7-1796
- Yellowbird, the summer, 13-3464**
- Yellow Fever Commission, work of, 12-3236**
- Yellow-hammer, a bird, 8-2109, 2111, 12-3155**

GENERAL INDEX

- Yellowhead:** see Tête jaune
Yellowhead Pass, railway in, 9-2276
Yellow-jacket, a wasp, 11-2860
Yellowstone, falls of the, 3-587
Yellowstone Lake, in Yellowstone Park, 3-587
Yellowstone Park, and Boone, 24-6248, 6256
 gems from, 24-6374
 in America, 2-421; 3-582, 583, 586
Yellowstone River, in Yellowstone Park, 3-587
Yellow-throat, a warbler, 9-2346
Yellow-wort, a plant, 16-1136
Yen, boy who milked deer, 23-6028
Yenfoh, a Chinese boy, 21-5478
Yenisei River, in Siberia, 15-3804
Yeoman, in "Canterbury Tales," 15-3939
Yeoman, naval clerks, 23-6214
Yew, a tree, 14-3536, 21-5430
Yew-wood, called German ebony, 19-6034
Yoghurt, sour milk, 23-6102
Yoho Valley, in Canada, 15-3904
Yoke, of a boat, 18-1818
Yonge, Miss Charlotte M., English author, 10-2621, 2627
York, Duke of, gave Delaware to Penn., 2-531
 New York named for, 2-529
 white rose, badge of, 2-775
 see also James II, king of England
York, Can., early capital of Canada, 3-757-58, 6-1398; 13-3190
York, Eng., Cardinal Wolsey and, 8-2065
 St. Helena and, 20-5381
York Factory, and fur-traders, 18-4838
York, House of, in Wars of the Roses, 3-775-76
Yorkshire, churches of, 3-592
 woolen trade of, 3-773
Yorktown, McClellan at, 8-2048
 surrender at, 4-1008-09
Yoruba Country, in Africa, 13-3297
Yosemite Falls, in California, 1-139; 5-1310
Yosemite Valley, scenery of, 5-1310
Youghal, Raleigh's garden at, 21-5410
Young, Brigham, Mormon leader, 7-1839
Young, Dr., and nerves of the eye, 17-4625
Young, Ella Flagg, superintendent of schools, 12-3123
Young, James, and oil, 3-669; 16-1166
Young, Dr. Thomas, English physicist, 13-3482; 14-3592; 20-5166
Young, William, married Ella Flagg Young, 12-3123
Young Chevalier: see Stuart, Charles Edward
Young Men's Christian Association, money raised for, 13-3495
Young Pretender: see Stuart, Charles Edward
"Young Scholar," play, by Lessing, 13-3394
Young Turks, political party, 13-3246
Youth, land of, 8-2060
 poetry of, 4-1055
 see also Fountain of Youth
Yowcushi, Japanese village, 20-5182
Ypres, Bishop of, and Count d'Enmont, 20-5225
Yucatan, animals of, 4-1075
 birds of, 9-2342
 part of Mexico, 17-4397-4400
Yukon, and crime, 18-4624
 district of, 5-1281
 gold in, 20-5318
Yukon, productions of, 23-6092
 Territory of, 6-1454, 1457; 8-1916-18; 14-3732
Yukon River, in North America, 8-1916, 2148
Yu Shun, who became an emperor, 23-6028

Z

- "Z,"** in names, 13-3433
Zandam, Holland, Peter's hut at, 14-3724
Zacatecas, Mexican town, 17-4403
Zama, battle of, 20-5276
Zambesi River, African stream, 18-4300, 4308
 falls in, 13-3400
Zane, Elizabeth, and gunpowder, 11-2814
Zanzibar, African port and island, 10-2607; 16-1308
Zebra, and foal, 21-5665-66
 lion hunts for, 22-5883
 stripes of, 13-3148
Zeeland, province of, 14-3516
Zend-Avesta, sacred book, 20-5155
Zenebi, king of Balsora, 11-2753
Zenith, highest point of sky, 12-3146
Zenta, battle of, 21-5658
Zeppelin, Count (Ferdinand von), balloons of, 1-172-73
Zeppelins, air-ships or dirigible balloons, 1-172, 174
Zermatt, Alpine town, 12-2980
Zero, absolute, 18-4085-86
 on scales, 14-3673
Zeus, father of the gods, 20-5201, 5204, 5206
Ziccao, a bird, 8-1214, 1221
Zinc, alloys of, 7-1888
 and electricity, 8-2166
 in Brazil, 20-5371
 in bronze, 14-3646
 in Canada, 23-6094
 in West Indies, 23-6045
 production of, 10-2680
Zircon, precious stone, 24-6282
Zodiac, constellations of the, 10-2643
 signs of the, 24-6377
Zones, climate of temperate, 12-3045
 the arid, 14-3625
 see also Climal Zone
Zoo, animals caught for, 24-6211
 at Dublin, 1-155
 London, 4-1013-15
 that never was, 1-215
 see also Toy zoo
Zoo-guess, a game, 8-2144
Zoological Gardens, in New York, 19-5012
Zoroaster, founder of religion, 12-3023, 3028, 20-5146, 5155
Zoroastrianism, a religion, 12-3028
Zuccaro, Spanish artist, 22-5851
Zuccone, carved by Donatello, 11-2796
Zudis, Indian tribe, 1-16
Zürich, Swiss town, 12-2985, 2992
Zürich, Lake, in Switzerland, 12-2982, 2981
Zutphen, battle of, 2-475
Zuyder Zee, in Holland, 14-3540, 3542
Zwemer, Dr., comment on Bedouins, 23 6098
Zwingli, Swiss reformer, 12-2985, 2988

SPECIAL INDEX OF POEMS & NURSERY RHYMES

THIS is probably the most complete index of verses for boys and girls appearing in any book. The names of poets are in the general index, but in this special index a poem is entered three times, so that it can be found if we know either the title, the first line, or the author's name.

The collection of poetry in *The Book of Knowledge* is made up of separate poems, and they represent every kind of verse. There are sonnets, songs, odes, dramatic pieces, humorous verses, hymns, and psalms; nursery rhymes in English and French; folk-lore songs of Germany; songs set to music; nonsense verses; and selections from Shakespeare and many other poets whose works are too long to quote as a whole. The illustrations are not indexed.

Not only is this collection the largest and most representative collection ever made for children, but it is arranged on an educational plan, which not merely aims at cultivating a love for poetry in the minds of boys and girls, but also attempts to build up in the minds of readers a conception of the general nature of a poet's work, and of the meaning of particular poems. Every poem, moreover, has a special introduction, giving information about the author or the poem. The Poetry section, therefore, is a true education in the very best kind of literature.

All the poems of an author are together under his name. They are *indented* under the name, that is to say, the titles are set a little way in from the margin and not even with the other lines. This means that all poems with these short lines are by the author whose name is above them.

To find a poem look under the first line, the title, or the author's name. No notice is taken of "A" or "The," so that if you are looking for "The Spider and the Fly" you should look up "Spider."

The black-face figures give the volume number, and the light-face figures give the page number.

- ▲
- A, B, C, tumble down D, 14-3794
 A baby was sleeping, 11-2818
 A barking sound the shepherd hears, 14-3602
 A boy espied, in morning light, 24-6303
 A bridge weaves its arch with pearl, 21-5523
 A budding author, something new, 22-5742
 A butterfly perched on a mossy brown stile,
 19-4980
 A chieftain to the Highlands bound, 4-825
 A country life is sweet, 5-1294
 A cuckoo went back in his clock, 13-3405
 A dainty maid of R. K. D., 22-5712
 A dainty shepherd-maiden, 16-4190
 A diller, a dollar, in color, 9-2308
 A duck and a drake, 17-4339
 A fair girl was sitting in the greenwood shade,
 13-3404
 A farmer went trotting upon his gray mare, in
 color, 11-2825
 A farmer's dog leaped over the stile, 11-2748
 A fragment of a rainbow bright, 7-1871
 A gift on the finger, 14-3794
 A goodly host one day was mine, 12-3038
 A horse, long used to bit and bridle, 10-2510
 A joyful flourish lifted clear, 12-3460
 A kiss when I wake in the morning, 19-4980
 A light broke in upon my soul, 12-3151
 A lion with the heat oppress'd, 5-1157
 A little cock sparrow sat on a green tie, 6-1408
 A little fairy comes at night, 5-1156
 A little old man and I fell out, 13-3317
 A little saint best fits a little shrine, 11-2820
 A little stream had lost its way, 18-4774
 A million little diamonds, 10-2451
 A mouse found a beautiful piece of plum-cake,
 16-4187
 A nick and a nock, 16-4066
 A nightingale that all day long, 3-712
 A parrot from the Spanish main, 5-1294
 A peasant stood before a king, and said, 16-4337
 A perilous life, and sad as life may be, 5-1294
 A pie sat on a pear-tree, 12-3042
 A poet's cat, sedate and grave, 7-1800
 A primrose by a river's brim, 13-3255
 A red sky at night is the shepherd's delight,
 10-2536
 A rogue, poguey Bogie Man, 18-4722
 A sunshiny shower, 5-2134
 A swarm of bees in May, 6-1582
 "A temple to friendship," said Laura, enchanted,
 19-4898
 A thousand miles from land are we, 17-4518
 A wet sheet and a flowing sea, 17-4518
 A wind came up out of the sea, 14-3789
 A woodland walk, 11-2888
 Abide with me, fast falls the eventide, 15-3991
 Abou Ben Adhem and the Angel, 6-1156
 Above the edge of dark appear the lances of
 the sun, 13-3475
 Across the narrow beach we sit, 16-4338
 Addison, Joseph
 Spacious Firmament on High, 16-4066
 Twenty-third Psalm, 3-548
 Afar in the Desert, 8-1929
 Ah! vous dirai-je, Maman, 17-4423
 Ah, what can all thee, wretched wight, 23-6088
 Ahab Mohammed, 16-4337
 Aladdin, 19-4978
 Alas! how light a cause may move, 23-5982
 Alden, Margaret H.
 Mother's World, 10-2663
 Aldrich, Thomas Bailey
 Memory, 15-3990
 Alexander, Mrs.
 All Things Bright and Beautiful, 19-4897
 Burial of Moses, 22-5897
 Once in Royal David's City, 9-2190
 Alexander Selkirk, 19-4898
 Alihan, Leon
 Baby and the Brook, 16-4066
 All are architects of Fate, 15-3992
 All in the golden afternoon, 6-1483
 All pains the immortal spirit must endure,
 21-5590
 All peacefully gliding, 18-4651
 All that thou art not makes not up the sum,
 6-1575
 All the Children, 19-5067
 All the corn is a golden brown, 23-6132
 All the World's a Stage, 11-2935
 All Things Bright and Beautiful, 19-4897
 All things by immortal power, 14-3587
 All things shall pass away, 2-479
 All worldly shapes shall melt in gloom, 14-3792
 All's Right With the World, 3-713
 Allerton, Ellen P.
 Beautiful Things, 14-3604
 Allingham, William
 Fairies, 3-547
 Four ducks on a pond, 23-6087
 Robin Redbreast, 2-180
 Wishing, 4-1057
 Alma, field of heroes, hail! 22-5822
 Alma-Tadema, Miss Laurence
 If No One Ever Marries Me, 14-3606
 King Baby on His Throne, 14-3606
 Little Sister, 14-3605
 March Meadow, 14-3605
 Nesting Hour, 14-3605
 New Pelisse, 14-3605
 Playgrounds, 14-3605
 Twilight Song, 14-3605
 Alone I walked the ocean strand, 16-4186
 Ambitious Sophy, 16-4066
 America, the beautiful, 22-5819
 American Flag, 8-1928
 Among the fine old kings that reign, 20-5389
 An ancient story I'll tell you anon, 10-2447
 An old woman was sweeping her house, 22-5886
 And pray who are you? 12-3405
 And what is so rare as a day in June? 9-2285

INDEX OF POETRY

- And winking Mary-buds began to ope their
golden eyes, 11-2882
- Anderson, Alexander**
Cuddle Doon, 14-3603
Angels' Whisper, 11-2818
Announced by all the trumpets of the sky,
13-3404
Answer to a Child's Question, 2-480
Antony, the Great Speech of Mark, 11-2031
- Andersen, H.**
Autumn is a gipsy, 22-5899
Apple Winds, 20-5267
Arab's Farewell to His Steed, 3-710, 714
Arabia's desert-range, 1-102
Arctic Indian's faith, 20-5389
Ariel's Song, 2-331
Armageddon, 15-3990
Armies in the Fire, 1-103
Arming of Pigwigen, 7-1874
- Arnold, Sir Edwin**
Armageddon, 15-3990
- Arnold, Matthew**
Extract from, 21-5590
Forsaken Merman, 13-3401
Quiet Work, 20-5266
Shakespeare, 16-4065
Around the green givael the grass grows green,
15-3869
Arrow and the Song, 16-4188
Art thou poor, yet hast thou golden slumbers?
8-2023
Arthur O'Hower had broken his band, 12-3041
As down in the sunless retreats, 8-1929
As he trudged along to school, 18-4778
As I walked by myself, 4-1060
As I was going by Charing Cross, 10-2453
As I was going o'er Westminster Bridge, 12-3041
As I was going to St. Ives, in color, 11-2823
As I was going to sell my eggs, 16-1068
As I was going up Phippen Hill, 13-3317
As I went over the water, the water went over
me, 14-3791
As I went through a garden gap, 12-3041
As I went to Bonner, in color, 11-2825
As if some wounded eagle's breast, 12-3068
As in the sunshine of the morn, 14-3701
As Johnny went to school with books, 18-4778
As Life's unending column pours, 20-5169
As Little Jenny Wren, 14-3702
Aspiration, 16-4066
As soft as silk, as white as milk, 12-3041
As the days lengthen, 8-2131
As through the land at eve we went, 23-5985
Astronomy is 1-derful, 22-5712
At Atri, in Abruzzi, a small town, 24-6301
At Flores in the Azores, 16-4183
At Last, 14-3699
At midnight, in his guarded tent, 21-5633
At Sea, 17-4516
At the king's gate the subtle noon, 19-5066
Attend all ye who list to hear our noble Eng-
land's praise, 17-4516
Au clair de la lune, 17-4522
Auld Lang Syne, 11-2822
- Austin, Alfred**
Queen and the Flowers, 8-1927
Austria, 23-5819
Author's Resolution in a Sonnet, 23-5984
Autumn, 8-2238
Aye, tear her tattered ensign down, 6-1572
- B**
- Baa, baa, black sheep, with music, 7-1802
Baby, 3-548
Baby and I, 13-3318
Baby and the Brook, 16-4066
Baby, baby, by, 14-3605
Baby, baby, lay your head, 2-480
Baby moon, 'tis time for bed, 14-3605
Baby's got a new pelisse, 14-3605
Baby's got no legs at all, 14-3605
Babyland, by Ella Wheeler Wilcox, 6-1513
Babyland, by George Cooper, 11-2820
- Bailey, Philip James**
End of Life, 4-1057
Baillif's Daughter, 21-5498
- Baillie, Joanna**
Good-night, good-night, 4-1059
Ballad of Agincourt, 11-2743
- Balmain, Constantine**
Russia, 22-5821
- Banks, George Linnaeus**
What I Live for, 19-5065
Banner of England, not for a season, 14-3787
Bannockburn, 4-826
Barbara Frietchie, 19-4895
- Barbauld, Mrs. Anna Letitia**
Life, 20-5267
Barber, barber, shave a pig, 13-3405
Bard, The, 24-6299
Barefoot Boy, 9-2240
Bargain, 14-3789
- Baring-Gould, Rev. S.**
Now the day is over, 21-5502
Baron's Last Banquet, 16-4186
- Barr, Matthias**
Only a Baby Small, 11-2745
"Barry Dane!" see Logan, John R.
Bat, bat, come under my hat, 6-1582
- Bates, David**
Speak Gently, 16-4337
- Bates, Katherine L.**
America, the Beautiful, 22-5819
Bath Time, 14-3605
Battle of Hohenheim, 3-515
Battle of the Baltic, 7-1872
Battle-Hymn of the Republic, 22-5819
- Baxter, Richard**
Lord, It Belongs Not to my Care, 17-4421
Be Patient with the Children, 16-4066
Beautiful faces are those that wear, 14-3604
Beautiful Things, 14-3604
- Becker, Charlotte**
Envoy, 21-5498
- Becket, Thomas A.**
Columbia, the Gem of the Ocean, 22-5818
- Beddoes, Thomas Lovell**
How many times? 10-2451
Bedouin Song, 19-5064
Bed-time, 14-3605
- Beech Tree's Petition, 2-479**
Beech, The, with music, 15-3996
- Begbie, Harold**
What Every Wise Child Should Do, 21-5636
Beggar Maid, 4-824
Behind him lay the gray Azores, 3-547
Behold her, single in the field, 6-1575
Behold Shock-headed Peter, 18-4775
Believe me if all those endearing young charms
23-5985
Bell of Atri, 24-6301
Bell of St. Michel, 20-5391
Belle Dame sans Merci, 23-6088
Bells, The, 11-2821
Bells of Shandon, 22-5898
Beneath dim aisles, in odorous beds, 12-3064
- Bennett, William Cox**
Lullaby, O Lullaby, 16-4066
- Béranger, Pierre Jean de**
Grandmother's Tale, 6-1511
Mary Stuart's Farewell, 10-2448
Beside the ungathered rice he lay, 4-1058
Best School of All, 12-3178
Better Land, 20-5264
Better Things, 21-5500
Better to smell the violet cool, 21-5500
Betty Pringle had a little pig, 17-4520
Between nose and eyes a strange contest arose,
14-3603
Between the dark and the daylight, 13-3475
Bid me to live, and I will live, 14-3789
Big and Little Things, 14-3701
Billy, Billy, come and play, 13-3405
Billy Boy, 13-3319
Bingo, 10-2590
Birch and green holly, boys, 6-1582
Birds are singing round my window, 15-3991
Birds in Summer, 16-4188
Birds of a feather flock together, 16-4189
Birth of Christ, 9-2190
Bivouac of the Dead, 21-5633
- Bjerregaard, K. A.**
Sonnet of Norge, 22-5821
Black we are, but much admired, 12-3041
- Blake, William**
Lamb, 3-712
Laughing Song, 13-3316
Night, 23-5984
Nurse's Song, 7-1874
Piping Down the Valleys Wild, 21-5632
Sleep, Beauty Bright, 7-1875
Tiger, 5-1157
Bless you, bless you, bonnie bee, 12-3318
Blessed are they that mourn, 19-4899

INDEX OF POETRY

- Blessings on thee, little man, 9-2240
Blowett, Jean
 Song of the golden sea, 19-4651
 Blind Boy, 4-1057
 Blow, blow, thou winter wind, 11-2929;
 21-5588
 Blow, wind, blow, and go, mill, go, 12-4720
 Blue and the Gray, 10-2450
 Boadicea, 2-478
 Bobby Shaft is gone to sea, 22-5734
 Bogle Man, with music, 12-4722
Boker, George Henry
 Digge for a Soldier, 4-1056
Bonar, Dr. Moratius
 Thy way, not mine, O Lord, 16-4065
 Bonnie Jean, 20-5160
 Bonny Kilmeny gaed up the glen, 17-4417
 Born in the purple, born to joy and pleasure,
 12-3064
Bostwick, Helen E.
 King's Picture, 20-5264
 Bounce Buckram, velvet's dear, in color,
 9-2192
Bourdillon, Francis William
 Night has a thousand eyes, 23-5985
 Bow-wow, says the dog, 22-5734
 Bow, wow, wow, whose dog art thou? 16-4067
Bowles, William Lisle
 Caged Bird, 14-3604
 Boy and the Angel, 16-4185
 Boys' Song, 3-713
 Brabanconne, La, 22-5821
 Bravest battle that ever was fought, 12-4774
 Break, Break, Break, 19-5064
Brewer, Ebenezer Cobham
 Little Things, 4-1057
 Brian O'Lin had no breeches to wear, 13-3318
 Bridge, 8-2238
 Bring back your sheep, 16-4190
 Brook, 1-103
Brown, F. C.
 Hundred Years to Come, 21-5500
Browning, Elizabeth Barrett
 Child's Thought of God, 3-548
 Court Lady, 23-5981
 Musical Instrument, 7-1799
 My Kate, 22-5900
 Poet and the Bird, 21-5501
 Sleep, 21-5633
 Sweetest Lives, 6-1572
 Valediction, 6-1572
 Weakest Thing, 14-3700
 Woman's Shortcomings, 16-4187
Browning, Robert
 All's Right with the World, 3-713
 Aspiration, 16-4066
 Boy and the Angel, 16-4185
 Grow old along with me, 9-2307
 Home Thoughts From Abroad, 2-2023
 How they Brought the Good News, 2-2305
 Incident of the French Camp, 12-3992
 Last Ride Together, 20-5160
 Lost Leader, 23-5982
 Patriot, 12-4719
 Pied Piper of Hamelin, 2-370
 Prosopice, 4-1056
Brownlow, M. E.
 Work, 20-5388
Bryant, William Cullen
 Blessed are they that mourn, 19-4899
 Death of the Flowers, 12-4719
 Extract from, 11-2882
 Forest Hymn, 10-2449
 Gladness of Nature, 16-4338
 Indian at the Burial-place of his Fathers,
 20-5266
 Planting the Apple-tree, 20-5264
 Robert of Lincoln, 10-2511
 Song of Marion's Men, 6-1573
 To a Waterfowl, 11-2820
 To the Fringed Gentian, 19-4899
 Bugle, 13-3403
 Builders, 15-3992
Bull, John
 God Save the King, 20-5267
Bunyan, John
 Pilgrim, 2-2022
 Shepherd boy's song in "Pilgrim's Progress,"
 14-3791
 Burial of Moses, 22-5897
 Burial of Sir John Moore, 3-713
 Burial of the Linnet, 13-3476
Burns, Rev. James Drummond
 An Evening Hymn, 16-4186
Burns, Robert
 Auld Lang Syne, 11-2822
 Bannockburn, 4-826
 Bonnie Jean, 20-5160
 Cotter's Saturday Night, 12-4068
 John Anderson, 14-3791
 Man's a Man for a' that, 12-4774
 My Heart's in the Highlands, 6-1574
 O, wert thou in the cauld blast, 24-6300
 Red, Red Rose, 19-5065
 To a Mountain Daisy, 17-4516
 Bury the Great Duke, 12-4715
 Butterfly and the Snail, 14-3701
 Butterfly's Ball, 4-1058
 Butterfly's Funeral, 10-2451
 Buttons, a farthing a pair, 15-3868
 By Nebo's lonely mountain, 22-5897
 By the Flow of the Inland River, 10-2450
 By the moon's silver ray, 17-4522
 By the rude bridge that arched the flood,
 6-1574
 By the sea, 7-1873
 By the shores of Glitche Gumees, 15-3865
 Rye, Baby Bunting, 4-827
 Bye, oh, my baby, 14-3794
Byrom, John
 Christians, awake, 9-2188
Byron, George Gordon, Lord
 Destruction of Sennacherib, 9-2306
 Eve of Waterloo, 21-5634
 Extracts from, 12-3151
 Prisoner of Chillon, 12-3176
 She Walks in Beauty, 13-3402
 Solitude, 12-4715
 To Thomas Moore, 23-5983
 Vision of Belshazzar, 2-2133
- C
- Caged Bird, 14-3604
Campbell, Thomas
 Battle of the Baltic, 7-1872
 Beech-tree's Petition, 2-479
 Hohenlinden, 4-1059
 Irish Harper, 10-2449
 Last Man, 14-3792
 Lord Ullin's Daughter, 4-825
 Parrot, 5-1294
 Poor Dog Tray, 13-3316
 Ye Mariners of England, 3-715
 Canadian Boat Song, 12-4649
 Canadian song-sparrow, 20-5390
 Cane-Bottomed Chair, 21-5681
Carey, Lady Elizabeth
 True Greatness, 11-2745
Carey, Henry
 Sally in Our Alley, 14-3789
Carroll, Lewis
 Lion and the Unicorn, 21-face 5636
 "Tweedledum and Tweedledee," 21-550
 Walrus and the Carpenter, 6-1576
Cary, Phoebe
 Leak in the Dyke, 7-1797
 Casablanca, 5-1294
 Castle by the Sea, 24-6304
 Castle-builder, 14-3604
 Cat's Tea-party, 7-1802
 Cataract of Lodore, 5-1292
 Cedar and pine and fir and branching palm,
 14-3524
 C'est la mere Michel qui a perdu son chat,
 17-4523
Chadwick, John White
 His Mother's Joy, 17-4517
 Character of a Happy Life, 16-4065
 Charge of the Light Brigade, 7-1798
 Charley, Charley, stole the barley, 16-4067
Chaucer, Geoffrey
 Extracts from, 2-494, 497-99; 15-3940
 Cherry Ripe, 13-3402
Child, Mrs. Lydia Maria
 Thanksgiving Day, 19-4899
 Child and Mother, 14-3793
 Child and the Snake, 2-2132
 Children's Hour, 13-3476
 Child's Evening Prayer, by Coleridge, 2-547
 Child's Evening Prayer, by Graves, with music,
 12-3478
 Child's Thought of God, 3-548
 Child's Wish in June, 21-5500
 Christians, Awake, Salute the happy morn,
 9-2188
 Christmas Carol, 13-3475

INDEX OF POETRY

- Christmas Hymn, 19-4976
 Christmas is coming, the geese are getting fat, 19-1180
 Christmas Morning, 9-2189
Cibber, Colley
 Blind Boy, 4-1057
 Circle 23-5982
 Clap, clap handles, 16-4068
Clare, John
 Poet's Last Thoughts, 16-4338
 Clear and cool, clear and cool 10-2664
 Close his eyes, his work is done 4-1056
 Cloud, 20-5263
Clough, Hugh
 Say Not the Struggle Naught Availeth, 11-2822
 Cock a doodle-doo, in color 6-1581
 Cock-Robin got up early, 12-3042
 Cocks crow in the morn 4-826
 Cold and raw the north wind doth blow, 10-2453
Coleridge, Hartley
 Song of the Nightingale 2-479
Coleridge, Samuel Taylor
 Answer to a Child's Question, 2-480
 Child's Evening Prayer, 3-547
 Extract from 16-4112
 Good, Great Man 17-4421
 Colors of the flag, 20-5390
 Columbia, the Gem of the Ocean, 22-5818
 Columbus, 3-547
 Come, all ye weary wanderers 9-2189
 Come, dear children, let us away 13-3101
 Come, fairest fisher maiden here, 24-6103
 Come follow follow me, 14-3700
 Come, let us plant the apple-tree 20-5264
 Come, let's to bed, 4-828
 Come, little leaves said the wind one day, 9-2306
 Come, live with me and be my love 19-1065
 Come, take up your hats, and away let us haste, 4-1058
 Common Natures 14-3603
 Common Things 16-4188
 Composed upon Westminster Bridge, 15-3992
 Conclusion, 14-4791, 21-5413
Cook, Eliza
 Fein and the Moss 19-4897
 King Bruce and the Spider, 10-2509
 Mouse and the Cake 16-4187
 Old Arm Chair, 9-2-39
Cooper, George
 Babyland, 11-2820
 Leaves and the Wind, 9-2306
Cornwall, Barry
 Ljsherman 5-1294
 Horned Owl 10-2611
 Sea, 19-4896
 Stars, 3-715
 Stormy Petrel 17-4518
 Coronation, 19-5066
Cory, William
 Hicacitus, 21-5632
 Cotter's Saturday Night, 16-4063
 Could ye come back to me, Douglas Douglas, 8-1928
 Could you count the bright stars peeping, 12-3039
 Council of Horses, 12-3177
 Counsel to Girls, 7-1799
 Court Lady, 23-5981
 Court of Fairyland, in color, 2-frontis
 Courtin', 6-1512
Cowper, William
 Alexander Selkirk, 19-4896
 Boadicea, 2-478
 Dispute Between Nose and Dyes, 14-3603
 Dog and the Water-lily, 8-2132
 Epitaph on a Hare, 6-2133
 Faithful Bird 12-3177
 God moves in a mysterious way, 7-1873
 John Gilpin, 10-2657
 Loss of the Royal George, 2-480
 Nightingale and Glow-worm, 3-712
 Retired Cat, 7-1800
 Cradle Song, 7-1876, 22-5900
 Croak said the toad, I'm hungry, I think, 16-4067
 Crocus, 18-4772
 Cromwell, our chief of men, who through a cloud 15-3991
 Cross patch, 6-1582
 Crossing the Bar 6-1576
 Cry of the Dreamer 18-4773
 Cuckoo and the Jackass, with music, 14-3795
 Cuddle Doon, 14-3603
Cunningham, Allan
 At Sea, 17-4516
 Curfew Bell, 12-3037
 Curly Locks, with music, 6-1582
 Cushey cow, bonny, let down thy milk, 18-3869
- D**
- Dad, has a boat, 18-4190
 Daffodils, 1-104
 Dainty diddlety, my mammy's maid, 22-5734
 Daisy at Christmas, 19-4978
 Dame get up, and bake your pies, in color, 9-2194
 Dance a baby, with music, 8-2134
 Dance, little baby, dance up high, 13-3477
 Dance of the Flowers, 12-3039
 Dance to your daddie 4-1060
 Darius Green and his Flying-Machine, 23-6085
 Dairling mother, shall I say, 17-4423
 Day is Done 19-4978
 Daybreak 14-3789
 Death 14-3788
 Death be not proud, though some have called thee, 14-3788
 Death of Napoleon, 9-2307
 Death of the Flowers, 12-4719
 Death of the Old Year, 9-2191
 De Bell of St Michel, 20-5391
 Deed and a Word, 18-4774
 Defence of Lucknow, 14-3787
Dekker, Thomas
 O Sweet Content, 8-2023
 Deserted House, 14-3699
 Deserted Village, 22-5727
 Destruction of Sennacherib, 9-2306
 Dey said in the winter, 19-4899
Dibdin, Charles
 Tom Bowling, 7-1801
Dibdin, Thomas J.
 Sir Sidney Smith, 7-1871
Dickens, Charles
 Ivy Green, 10-2449
 Dickey, dickey, dare, 16-4067
Dickinson, Mary Lowe
 If We Had But a Day, 13-3403
 Did you hear of the curate who mounted his mare? 13-3316
 Did you never think what wondrous being these? 17-4519
 Diddle diddle dumpling, my son John, 17-4422
 Diddle-diddle-dumpty, 13-3477
 Ding dong bell, with music, 10-2514
 Dirge For a Soldier, 4-1056
 Discontented Apples, 11-2746
 Discoverer, 17-4420
 Dispute between Nose and Eyes, 14-3603
 Dixie, 22-5818
 Do you know what the birds say? The sparrow, the dove, 2-480
 Do you say that sugar-making, 10-2505
 Do you wish the world were better? 8-2132
 Dobbin's Friend, 11-2745
 Doctor Faustus was a good man, 15-3868
 Doctor Foster went to Glo'ster, 10-2453
Dodge, Mary Mapes
 Billy Boy, 13-3319
 Dobbin's Friend, 11-2745
 Frolic of Johnny the Stout, 11-2742
 Good Little Girls, 13-3319
 Little White Feathers, 13-3319
 One and One, 13-3319
 Terrible Bell, 7-1876
 Three Old Ladies, 13-3319
 Willie's Lodger, 11-2746
 Does the road wind up hill all the way? 18-4772
 Dog and the Water-lily, 8-2132
Domett, Alfred
 Christmas Hymn, 19-4976
Donne, Dr. John
 Death, 14-3788
 Don't fret about the thing that's past, 13-3370
Doudney, Sarah
 Lesson of the Water Mill, 18-4778
 Things That Never Die, 11-2746
 Douglas, Douglas, Tender and True, 8-1938
 Douglas tragedy, 22-6088
 Down from yon distant mountain height, 18-4066
Drake, Joseph Rodman
 American Flag, 9-1938
Drayton, Michael
 Arming of Pigwiggan, 7-1874

INDEX OF POETRY

Drayton, Michael
 Ballad of Agincourt, 11-2743
 Extract from, 15-3940
 Dream of Eugene Aram, 8-2129
 Dribble, dribble, trickle, trickle, 13-3318
Drummond, William Henry
 De Bell of St. Michel, 20-5391
 "Ole Tam on Bord-a Plouffe," 20-5387
Dryden, John
 Extracts from, 14-3524
Duncan, Mrs. Mary Lundie
 Jesus, Tender Shepherd, 16-4186
 Dust, 21-5500
Dyer, Sir Edward
 My Mind to me a Kingdom is, 8-2023

E

Earth has not anything to show more fair,
 15-3992
Edgar, Sir James
 Canadian song-sparrow, 20-5390
 Eftsoons they heard a most melodious sound,
 21-5486
Elder, Mrs. Lilla T.
 Mother's Kisses, 5-1157
 My Menagerie, 9-2289
 O Mamma's Pickaninny, 19-4899
 There's Room at the Top, 8-1513
 Uncle Sam's Young Army, 13-3474
 Elegy on the Death of a Mad Dog, 7-1873
 Elegy Written in a Country Churchyard, 8-2021
Ellot, Marjette Robins
 Why It Was Cold in May, 21-5501
 Elixir, 16-3991
 Elizabeth, Elspeth, Betsey and Bess, in color,
 8-2308
Emerson, Ralph Waldo
 Extracts from, 11-2883
 Good-bye, 20-5159
 Hymn of Concord, 6-1574
 Mountain and the Squirrel, 4-926
 Nation's Strength, 17-4517
 Snow Storm, 13-3404
 En passant dans un petit bois, 19-4981
 Enchanted Shirt, 1-104
 End of Life, 4-1057
 England and America in 1782, 18-4717
 England's sun was slowly setting, 12-3037
 Envoy, 21-5498
 Epitaph on a Hare, 8-2133
 Ere on my bed my limbs I lay, 3-517
 Erl King, 24-6304
 Eternal Father, Strong to Save, 19-4896
 Ethereal minstrel! pilgrim of the sky, 8-2133
 Eve of Waterloo, 21-5631
 Even such is time, that takes in trust, 14-3791.
 21-5413
 Evening Hymn, 16-4185
 Evening Hymn, 6-1574
 Every evening, after tea, 21-5501
 Every lady in this land, 16-4720; 22-5743
 Every one that flatters thee, 11-2934
Ewing, Mrs.
 Burial of the Linnet, 13-3476
 Excelsior, 3-716
 Eyes of blue, and hair of gold, 10-2663

F

Faber, Frederick William
 Extract from, 13-8469
 Faintly as tolls the evening chime, 18-4649
 Fair Daffodils, 8-2131
 Fair stood the wind for France, 11-2743
 Fairies, 3-547
 Fairy Life, 11-2929
 Fairy Lullaby, 11-2929
 Fairy Song, 3-712
 Fairy Tempter, 13-3404
 Fais dodo, Colas, mon petit frère, 17-4522
 Faith, 16-4184
 Faithful Bird, 12-3177
 Fall of Cardinal Wolsey, 11-2930
 Farewell, 1-104
 Farewell, a long farewell to all my greatness,
 11-2930
 Farewell, farewell, thou beautiful clime,
 10-2443
 Farragut, 10-2450
 Father and I went down to camp, 22-5818

Father in heaven, hallowed be Thy name,
 17-4420
 Father William, 3-546
 Fatherland, 4-926
 Father's Advice to His Son, 11-2934
 Fe, fi, fo, fum, 7-1811
 Fear death?—to feel the fog in my throat,
 4-1056
 Fear no more the heat o' the sun, 21-5534
 Fern and the Moss, 19-4897
 Fiddle-de-dee, fiddle-de-dee, 5-1295
 Fiddle-Dee-Dee, 19-5068
 Fidelity, 14-3602
Field, Eugene
 Fiddle-Dee-Dee, 19-5068
 Good-Children Street, 8-2024
 Rock-a-by Lady, 19-4979
 Shuffle-Shoon and Amber-Loek, 15-3867
 Teeny-Weeny, 21-5504
 Wynken, Blynken, and Nod, 1-100
Finch, Francis Miles
 Blue and the Gray, 10-2450
 Nathan Hale, 6-1573
 Finds tongues in trees, books in the running
 brooks, 18-3255
 Finis, 18-4774
 Fir-tree, 12-3040
 First Nowell, 19-4976
 First the farmer sows his seed, 14-3794
 Fisherman, 5-1294
 Five little fairies, bright as the day, 4-990
 Five little pussy-cats, invited out to tea, 7-1803
 Five little sisters, walking in a row, in color,
 16-3871
 Flag, 22-5732
 Flag, 22-5824
 Flag Day, 22-5732
 Flight of Peter Bell, 15-3989
 Flight of the Arrow, 17-4420
 Flight of Youth, 20-5266
 Flour of England, fruit of Spain, 12-3041
 Flower in the crannied wall, 5-1195; 11-2877
Follen, Emma Lee
 Oh, look at the Moon, 12-3038
 For every evil under the sun, 6-1582
 For I dipt into the future, far as human eye
 could see, 19-5067
 For I have learned, 20-5359
 For want of a nail the shoe was lost, in color,
 11-2831
 Forest Hymn, 10-2449
 Forsaken Merman, 13-3401
Foster, Stephen Collins
 Massa's in the Cold, Cold Ground, 21-5632
 My Old Kentucky Home, 13-3402
 O, Boys, carry me 'Long, 9-2239
 Old Folks at Home, 6-1572
 Found in the garden dead in his beauty, 13-2470
 Fountain, 3-713
 Four-and-twenty tailors went to kill a snail,
 4-828
 Four ducks on a pond, 23-6087
 Four things a man must learn to do, 21-5633
 Fox and His Wife, The, in color, 3-549
France, Nursery Rhymes of
 Ah! vous dirai-je, Maman, 17-4423
 Au clair de la lune, 17-4522
 C'est la mère Michel qui a perdu son chat,
 17-4523
 En passant dans un petit bois, 19-4981
 Fais dodo, Colas, mon petit frère, 17-4522
 Je suis un petit poupon, 17-4423
 La Bergère, 16-4190
 La boulangère a des écus, 17-4522
 Les Petits Bateaux, 16-4190
 Pan! Qu'est-ce qu'est là? 17-4423
 Ramène Tes Moutons, 16-4190
 Sur le pont d'Avignon, 20-5162
 Friends and Platterers, 11-2934
 Friends, Romans, countrymen, lend me your
 ears, 11-2931
 Frog he would a-wooling go, A, with music,
 6-1514
 Frolic of Johnny the Stout, 11-2742
 From breakfast on through all the day,
 4-1059
 From out the tomb the dead heroes are speaking,
 22-5820
 From the coverts of the thicket comes a won-
 drous burst of song, 13-3462
 From the desert I come to thee, 19-5064
 From the leafy maple ridges, 20-5360
 From thy fearful sword I know thee, 22-5823
 Frost Looked Forth, 20-5158
 Full knap-deep lies the winter snow, 9-2191

INDEX OF POETRY

G

Gaelic Lullaby, 20-5388
Garibaldi's Hymn, 22-5820
Gates, Ellen M. H.
My Mother's Hands, 10-2664
Gather ye Rosebuds while ye may, 7-1799
Gay, John
Butterfly and the Snail, 14-3701
Council of Horses, 12-3177
Gentle Jesus, meek and mild, 19-5067
Gentlefolks, in my time I've made many a rhyme, 7-1871
Germany, Folk-songs of, in English verse
Dance of the Flowers, 12-3039
Fir-tree, 12-3040
God Only Knows, 12-3039
Hobby-horse, 12-3040
Son of My Heart, 12-3039
Song of the Two Hares, 12-3039
Were I a Birdie Too, 12-3039
Gilder, Richard Watson
Great Nature is an Army Gay, 17-4518
Ginevra, 8-1926
Girls and boys come out to play, with music, 4-1060
Gibborne, Thomas
Worm, 7-1874
Give me your ear, good children all, 7-1875
Give thy thoughts no tongue, 11-2934
"Give us a song!" the soldiers cried, 8-1928
Give us men, 23-6086
Gladness of Nature, 16-4338
Go 'way, go 'way, don't ring no more, ole bell of Saint Michel, 20-5391
Go, lovely rose, 22-5899
Go to bed first, 16-4189
Goblin Market, 7-1867
God be with thee, my beloved, 6-1572
God makes sech nights, 6-1512
God moves in a mysterious way, 7-1873
God of our fathers, known of old, 19-4898
God Only Knows, 12-3039
God preserve our noble Emp'r'r, 22-5819
God Rest You, Merry Gentlemen, 9-2187
God Save the King, 20-5267
God Sends Love to You, 13-3475
God shield ye, heralds of the spring, 12-3038
Goethe, Johann W. von
Erl King, 24-6301
Haste not! Rest not, 6-1573
Rest, 24-6304
Wild Rose, 24-6303
Goldsmith, Oliver
Deserted Village, 22-5727
Elegy on the Death of a Mad Dog, 7-1873
Epitaph for Burke, 16-4160
Good friend, for Jesus' sake forbear, 21-5582
Good, Great Man, 7-4121
Good King Wenceslas, 4-924
Good little boys should never say, 7-1724
Good Little Girls, 13-3319
Good name in man or woman, dear my lord, 11-2934
Good people all of every sort, 7-1873
Good-bye, good-bye to summer, 2-480
Good-bye, proud world! I'm going home, 20-5159
Good-Children Street, 8-2024
Good-morrow to you, Valentine, 11-2748
Good-night, 2-480
Good-night, Good-night! 4-1059
Goosey, goosey, gander, 6-face 1409; with music, in color, 8-2808
Gould, Hannah Flagg
Name in the Sand, 16-4186
Graceful and tall the slender, drooping stem, 11-2886
Grandmother's Tale, 6-1511
Graves, Alfred Percival
Bees, with music, 18-3996
Bogle Man, with music, 18-4722
Child's Evening Prayer, with music, 13-3478
Cuckoo and the Jackass, with music, 14-3795
Ladybird, Fly, with music, 12-3040
M. N. O., with music, 13-3317
White Hart, with music, 15-3872
see also Germany, Folk-songs of
Gray, Thomas
Bard, 24-6299
Elegy in a Country Churchyard, 10-2620
Gray-haired Old Farragut, 10-2450
Great A, little a, 17-4422
Great A, little a, bouncing B, 14-3702

Great Adventurer, 21-5635
Great Day for England, 11-2933
Great King William spread before him, 13-3408
Great Nature is an Army Gay, 17-4518
Great Speech of Mark Antony, 11-2931
Great, wide, beautiful, wonderful world, 4-826
Greedy Boy, 4-924
Greenaway, Kate
Five little sisters, walking in a row, 15-3871
Little Miss Patty and Master Paul, 15-3871
Look over the wall, and I'll tell you why, 15-3870
Polly's, Peg's and Poppety's, 15-3871
Prince Minkin and his mamma, 15-3870
Three little girls were sitting on a rail, 15-3871
Three tabbies took out their cats to tea, 15-3871
Under the window is my garden, 15-3870
Greene, Albert Gorton
Baron's Last Banquet, 16-4186
Gregory, Charles Noble
Two Men, 21-5501
Greville, Sir Fulke
On Sir Philip Sidney, 21-5497
Groves were God's first temples, 10-2449
Grow old along with me, 9-2307
Guy Fawkes, Guy: Stick him up on high, 7-1807

H

Hail, Columbia, 10-2663
Hail, to thee, blithe spirit, 20-5157
Half a league, half a league, 7-1798
Hall, Gertrude
Dust, 21-5500
Halleck, Fitz-Greene
Marco Bozzaris, 21-5633
Halt! Who goes there? 17-4423
Hamelin Town's in Brunswick, 2-370
Hamerton, S. O.
Birth of Christ, 9-2190
Handy Pandey, Jack-a-Dandy, 16-4189
Happiest Land, 7-1800
Happiness, 14-3700
Hark, hark! the dogs do bark, 3-739
Harte, Bret
Heathen Chinee, 6-1575
Harvest Time, 18-4651
Hast thou seen that lordly castle? 24-6304
Haste not! Rest not, 6-1573
Have you heard of the Valley of Babylon? 6-1513
Have you heard of the wonderful onc-hoss shay? 18-5063
Hawshawe, Mrs.
Common Things, 16-4188
Hay, John
Enchanted Shirt, 1-104
Haydn, Joseph
Austria, 24-5819
He comes in the night! He comes in the night, in color, 8-2193
He loves me, he don't, in color, 17-4339
He quickly arms him for the field, 7-1874
He spoke of Burns; men rude and rough, 19-5068
He that is down needs fear no fall, 14-3791
He that would thrive, 4-929
He was a rat, and she was a rat, 19-4980
He was an apple, and she was an apple, 11-2746
Heap on more wood! the wind is chill, 9-2188
Hear, hear, O ye nations, and hearing obey, 22-5824
Hear, O Ye Nations, 22-5824
Hear the sledges with the bells, 11-2821
Heathen Chinee, 6-1575
Hector Protector was dressed all in green, in color, 11-2825
Heine, Heinrich
Lorelei, 8-1929
Pretty fisher maiden, 24-6303
To my sister, 24-6303
Hemans, Felicia
Better Land, 20-5364
Casablanca, 8-1294
Homes of England, 4-925
Pilgrim Fathers, 20-5158
Henry was every morning fed, 8-2132
Her arms across her breast she laid, 4-824
Her hair was tawny with gold, 22-5891
Heraclitus, 21-5632
Herbert, George
Elixir, 15-3991

INDEX OF POETRY

- Here, a sheer hulk, lies poor Tom Bowling, 7-1801
 Here am I, little Jumping Joan, 4-828
 Here in this picture you can see, 18-4777
 Here lies our good Edmund, whose genius was such, 16-4160
 Here lies whom hound did ne'er pursue, 8-2133
 Here we go round a ginger ring, 17-4520
 Here we go up, up, up, 18-4720
 Here's a poor widow from Babylon, in color, 6-1579
Herriek, Robert
 Cherry Ripe, 13-3402
 Counsel to Girls, 7-1799
 Fair Daffodils, 8-2131
 Ternarie of Littles, 11-2820
 To Anthea, 14-3789
 Hey diddle, dinkety, poppety, pet, 14-3702
 Hey, my kitten, my kitten, 18-4720
Heywood, Thomas
 Lark, 13-3402
 Hi, diddle diddle, 4-827
 Hiawatha's brothers, 20-5391
 Hiawatha's childhood, 16-3865
 Hiawatha's departure, 16-3866
 Hick-a-more, hack-a-more, 12-3041
 Hickory, Dickory, Dock, with music, in color, 3-face 717
Hickson, William Edward
 Try Again, 13-3476
 Higgleddy, piggleddy, here we lie, 4-1060
 Higgleddy piggleddy, my black hen, 5-1295
 High diddle ding, in color, 11-2825
Hill, Aaron
 Common natures, 14-3603
 Hills o' Skye, 20-5388
 His fame shall never pass away, 6-1511
 His Mother's Joy, 17-4517
 Ho, for a frolic, 11-2742
 Ho, ho! quoth the frog, 16-4067
 Ho, my kitten, a kitten, 22-5734
 Hobby-horse, 12-3040
Hoffman, Dr.
 Hunter and the Hare, 18-4776
 Johnny Head-in-Air, 18-4778
 Shock-headed Peter, 18-4776
 Story of a Blackamoor, 18-4777
 Story of Fidgety Phillip, 18-4776
 Story of Flying Robert, 18-4778
Hogg, James
 Boy's Song, 3-713
 Kilmeny, 17-4417
 Hohenlinden, 4-1059
 Hold the high way, and let thy soul take lead, 15-3940
Holland, Joseph Gilbert
 Christmas Carol, 13-3476
Holmes, Oliver Wendell
 Old Ironsides, 6-1572
 Two Armies, 20-5159
 What the Stars Have Seen, 11-2746
 Wonderful One-hoss Shay, 19-5063
 Holyrood, 20-5158
 Home, Sweet Home, 2-478
 Home they brought her warrior dead, 18-4814
 Home Thoughts from Abroad, 8-2023
Homer
 Extract from, 5-1291
 Homes of England, 4-925
Moore, Thomas
 Dream of Eugene Aram, 8-2129
 I Remember, I Remember, 4-925
 November in England, 17-4518
 Queen Mab, 5-1156
 Song of the Shirt, 11-2818
 Hop, hop, hop, 12-3040
Monkhouse, Joseph
 Hall, Columbia, 10-2663
 Horned Owl, 10-2511
 Horse, 10-2510
Monroe, Frederick L.
 Hear, O Ye Nations, 22-5824
Monaghan, Lord
 Men of Old, 17-4517
 House that Jack built, pictures, 22-5733
 Housekeeper, 16-4336
 How beautiful is the rain, 20-5265
 How does the water come down at Lodore? 6-1292
 How doth the little busy bee, 3-546
 How happy is he born or taught, 16-4065
 How Horatius Kept the Bridge, 6-1403
 How many miles to Babyland? 11-2820
 How many miles to Babylon? 13-3318
 How many pounds does baby weigh, 7-1800
 How many times do I love thee, dear, 10-2451
 How pleasant the life of a bird must be, 16-4188
 How seldom, friend, a good, great man inherits, 17-4421
 How They Brought the Good News, 9-2305
 How to Write a Letter, 13-3475
 How would Willie like to go, 19-5065
Howard, Alice G.
 Sorrow, 17-4518
Kowe, Mrs. Julia Ward
 Battle-Hymn of the Republic, 22-5819
Kowitz, Mary
 Birds in Summer, 16-4188
 Old Christmas, 19-5066
 Spider and the Fly, 14-3601
Kowitz, William
 Wind in a Frolic, 2-374
Kugo, Victor
 Stream and the Ocean, 10-2449
Kuma, Alexander
 Summer's Day, 10-2451
 Humpty Dumpty sat on a wall, 4-985
 Hundred years to come, 21-5500
Kunt, Leigh
 Abou Ben Adhem and the Angel, 5-1156
 Jenny Kiss'd Me, 14-3789
 Hunter and the Hare, in color, 18-4776
 Hunting Song, 17-4516
 Hush, baby, my dolly, I pray you don't cry, 14-3702
 Hush, my dear, lie still and slumber, 22-5900
 Hush! the waves are rolling in, 10-5385
 Hush-a-bye, baby, lie still with thy daddy, in color, 17-1339
 Hush-a-bye, baby, 16-4067
 Hush-a-bye, Baby, on the Tree Top, with music, in color, 21-face 5837
 Hush-a-bye, Colin, brother of mine, 17-4522
 Hush'd was the evening hymn, 16-4185
 Hymn of Concord, 6-1574
 Hymn of Empire, 20-5390
 Hymn of the Nativity of My Saviour, 9-2189
 Hymn to Liberty, 22-5821
 Hymn to Liberty (Greece), 22-5823

I

 I am monarch of all I survey, 19-4896
 I am tired of planning and toiling, 18-4773
 "I am writing to mother," Alice said, 5-1157
 I am! yet what I am who cares or knows? 16-4338
 I bring fresh showers for the thirsting flowers, 20-5263
 I cannot do the big things, 14-3701
 I come from haunts of coot and hern, 1-103
 I died a queen. The Roman souldier found, 18-4853
 I do not like thee, Doctor Fell, 15-3868
 I do not want a puppy-dog, 19-4902
 I do think my head, 14-3588
 I had a little boy, 16-4189
 I had a little moppet, 14-3702
 I had a little nut-tree, in color, 9-2308
 I had a little pony, 10-2455
 I had no thought of stormy sky, 20-5267
 I have a little kinsman, 17-4420
 I have a little shadow that goes in and out with me, 1-103
 I have a little sister, they call her Peep, Peep, 12-3041
 I have been here before, 16-4187
 I have had playmates, I have had companions, 14-3602
 I have seen you, little mouse, 11-2748
 I hear thee speak of a better land, 20-5264
 I heard a brooklet gushing, 24-6303
 I heard men saying: Leave hope and praying, 14-3791
 I know a child, and who she is, 15-3869
 I know not that the men of old, 17-4517
 I know not what sorrow is o'er me, 8-1929
 I know this earth is not my sphere, 16-4066
 "I lak on summer ev'ning w'en nice cool win' is blowin'," 20-5397
 I live for those who love me, 19-5065
 I love it, I love it, and who shall dare, 9-2239
 I love little pussy, 13-3478
 I love sixpence, pretty little sixpence, 5-1295; with music, 10-2453

INDEX OF POETRY

- I love the little flowers, 13-3477
 I love you well, my little brother, in color, 17-4339
 I must not throw upon the floor, 20-5161
 I often sit and wish that I, 13-4900
 I often wonder if our Phil, 13-4775
 I once had a sweet little doll, dears, 17-4517
 I remember, I Remember, 4-325
 I said, Then, dearest, since 'tis so, 20-5160
 I saw a new world, 24-6302
 I saw a peacock with a fiery tail, 22-5743
 I saw a ship a-sailing, 18-4720
 I saw a sower walking slow, 14-3792
 I saw eternity the other night, 10-2451
 I saw three ships come sailing by, in color, 8-2192
 I shot an arrow into the air, 16-4188
 I should like to rise and go, 5-1154
 I sing the Birth was born to-night, 9-2189
 I sprang to the stirrup, 9-2305
 I stood and watched my ships go out, 20-5267
 I stood on the bridge at midnight, 9-2238
 I stood upon the plain, 20-5390
 I strove with none, for none was worth my strife, 18-4771
 I suppose if all the children, 19-5067
 I swing to the sunset land, 20-5388
 I think he had not heard of the far towns, 22-5729
 I think when I'm a grown-up man, 10-2656
 I think When I Read, 20-5267
 I Travel'd Among Unknown Men, 19-4977
 I wandered lonely as a cloud, 1-104
 I wasn't brave, I had to cry, 10-2656
 I'd like to be a farmer, 14-3601
 If all the ships I have at sea, 7-1798
 If all the world and Love were young, 8-2023
 If all the world were apple pie, 18-4720
 If bees stay at home, 22-5901
 If Candlemas Day be bright and fair, 7-1724
 If ever there lived a Yankee lad, 23-6085
 If I had as much money as I could spend, 5-1158
 If I want to be happy, 21-5636
 If ifs and ans, 8-2134
 If no one ever marries me, 14-3608
 If the old woman who lived in a shoe, 19-4900
 If thou shouldst ever come by choice or chance, 8-1926
 If We Had But a Day, 13-3403
 If wishes were horses, 10-3453
 If you are to be a gentleman, 15-3868
 If you order a person to bring you some chalk, 13-3424
 If you sneeze on Monday, you sneeze for danger, 10-2453
 If you were housed in a hut in a vale, 23-6196
 Il était une bergère, 16-1190
 I'll introduce—just wait awhile, 16-4190
 I'll sing you a song, 8-2134
 I'll tell you a story, 10-2455
 I'm a chubby little thing, 17-4423
 I'm a cracker of pipes, 19-4933
 I'm going out a-hunting, 13-3477
 "I'm writing to mother," Alice said, 5-1157
 In a cottage in Fife, 12-3042
 In a crack near a cupboard, with dainties provided, 4-924
 In Absence, 6-1575
 In April, 4-929
 In days of yore, from Britain's shore, 10-2506
 In his chamber, weak and dying, 11-2817
 In London once I lost my way, 20-5162
 In marble halls as white as milk, 12-3011
 In Memoriam, extracts, 15-3985; 23-5983, 5986
 In Praise of England, 11-2933
 In shining groups, each stem a pearly ray, 12-3068
 In summer I am very glad, 14-3605
 In the hollow tree in the old grey tower, 10-2511
 In the little Crimson Manual it's written plain and clear, 18-4651
 In the name of the Empress of India, 10-2512
 In the seaport of St. Malo, 18-4648
 In this our spacious isle, I think there is not one, 15-3940
 Inchcape Rock, 8-2131
 Incident in a Railroad Car, 19-5068
 Incident of the French Camp, 15-3992
 Independence Bell, 22-5730
 Indian at the Burial-place of His Fathers, 20-5266
 Industry of Animals, 11-2822
 Ingelow, Jean
 Seven Times One, 13-3476
 Story of Life, 19-5067
 Into the sunshine, 3-713
 Irish Harper, 10-2449
 Irving, Minna
 Flag Day, 22-5732
 Is John Smith within? 18-4720
 Is there, for honest poverty, 18-4774
 Is this a time to be cloudy and sad, 16-4338
 Isle of Long Ago, 12-4718
 It happened on a summer's day, 14-3604
 It is a beautiful evening, calm and free, 7-1873
 It is common, 19-5066
 It is not growing like a tree, 7-1874
 It is not the thing you do, dear, 19-4898
 It is the spot I came to seek, 20-5266
 It little profits that an idle king, 16-4717
 It matters little where I was born, 21-5501
 It settles softly on your things, 21-5500
 It sleeps among the thousand hills, 18-4649
 It stands beside the cottage door, 10-2500
 It was a summer evening, 3-545
 It was nothing but a rose I gave her, 19-4978
 It was roses, roses, all the way, 18-4719
 It was the calm and silent night, 18-4976
 It was the schooner Heperus, 1-105
 It's good to see the school we knew, 12-3178
 I've watch'd you now a full half-hour, 18-4065
 Ivy Green, 10-2449
- J
- Jack and Jill went up the hill, 2-453; with music, 20-5268
 Jack Frost went out on a wintry day, 9-2190
 Jack Jingle went 'prentice, 17-4422
 Jack Spratt could eat no fat, 8-1296
 Jack Spratt had a pig, 16-4068
 Jackson, Helen M.
 Coronation, 19-5066
 Like a blind spinner in the sun, 8-1929
 Lucky, come give me thy fiddle, 10-2453
 Jacques Cartier, 18-4648
 Je suis un petit poupon, 17-4423
 Jealous Jack Frost, 9-2190
 Jannaval
 La Brabançonne, 22-5821
 Jenny kiss'd me when we met, 14-3789
 Jesu, Lover of My Soul, 17-4421
 Jesus bids us shine, 15-3992
 Jesus, tender Shepherd, hear me, 16-4186
 Jezcze Polska, 22-5824
 Jim and George were two great lords, in color 9-2308
 Jock of Haxeldean, 7-1874
 John Anderson, my Jo, John, 14-3791
 John Cook had a little grey mare; he, haw, hum, 15-3868
 John Gilpin was a citizen, 10-2657
 Johnny Head-in-Air, in color, 18-4778
 Johnny shall have a new bonnet, 10-2514
 Johnson, E. Pauline
 Harvest Time, 18-4651
 Prairie Greyhounds, 20-5388
 Song my l'adde Sings, 18-4649
 Jonson, Ben
 Hymn on the Nativity of my Saviour, 9-2189
 True Growth, 7-1874
 Joy and temperance and repose, 11-2910
 Joy of Life, 5-1157
 Judge not the workings of his brain, 6-1512
 June, 9-2238
 Just for a handful of silver he left us, 23-5982
 Just to be tender, just to be true, 14-3700
- K
- Kate, John
 Fairy Song, 3-712
 On first looking into Chapman's Homer, 10-2663
 On the Grasshopper and Cricket, 18-4719
 To a Nightingale, 11-2744
 Keble, John
 Evening Hymn, 8-1574
 Rainbow, 7-1871
 Key, Francis Scott
 Star-Spangled Banner, 22-5817
 Kilmeny, A Fairy Legend, 17-4417
 King, Mrs. Harriet M.
 Crocus, 18-4772
 King and the Abbot, 18-2447
 King Baby on his throne, 14-3606

INDEX OF POETRY

- King Bruce and the Spider, 10-2509
King Christian stood beside the mast in smoke
and mist, 22-5820
King Lear and His Three Daughters, 10-2661
King of Clubs, he often drubs, 14-3702
King Pippin built a fine new hall, 10-2514
King's Picture, 20-5264
Kingsley, Charles
Farewell, 1-104
Lost Doll, 17-4517
Sands of Dee, 2-478
Three Fishers, 10-2510
Tide River, 10-2664
Ugly Princess, 17-4519
Young and Old, 12-3404
Kinney, Coates
Rain on the Roof, 21-5502
Kipling, Rudyard
Overland Mail, 10-2512
Recessional, 10-4593
Kitten and the Falling Leaves, 12-3476
Knave of Hearts, in color, 6-1410
Know, men of England, Anjou and Touraine,
22-6195
Kong Christian stod ved Hiern Mast, 22-5820
Krumpholtz
Moss Rose, 24-4303
- L**
- La Bergère, 16-4190
La boulangère a des écus, 17-4522
La plus aimable a mon gré, 16-4190
Ladybird, fly, with music, 12-3040
Lady-bird, lady-bird, fly away home, 4-986
Lafontaine, Jean de
Castle-builder, 14-3604
Lamb, Charles and Mary
Child and the Snake, 2-2132
Housekeeper, 16-4336
Lame Brother, 12-3474
Love, Death and Reputation, 23-5982
Old Familiar Faces, 14-3602
Lamb, 3-712
Lambs, 14-3605
Lame Brother, 12-3474
Lamps now glitter down the street, 1-103
Land of Nod, 4-1059
Land of Thus-and-So, 19-5065
Landon, Walter Savage
Pinis, 18-4774
Late Leaves, 14-3790
Winter, 23-5985
Laroom, Lucy
Extracts from, 12-3102
Lark, 12-3402
Lark-bird, lark-bird soaring high, 14-3605
Lars Persena of Clusium, 6-1403
Last Charge of the French at Waterloo, 10-2510
Last Man, 14-3792
Last Ride Together, 20-5160
Last Rose of Summer, 6-1512
Late Leaves, 14-3790
Laughing Brook, 12-4899
Laughing Song, 12-3316
Lavender blue and rosemary green, 16-4068
Lavender's blue, diddle, diddle, with music,
12-4981
Lay me a green sod under my head, 10-2634
Lay of the Last Minstrel, 10-2819
Lead, Kindly Light, 2-2013
Leak in the Dyke, 7-1797
Leary, Edwin
Nonsense Rhymes, 4-1062; 15-3994
Leaves and the Wind, 2-2306
Lear, James Matthew
Ahab Mohammed, 16-4337
Lend me thy mare to go a mile, in color,
17-4339
Les Petits Bateaux, 16-4190
Lesson of the Honey Bees, 11-2933
Lesson of the Water Mill, 16-4773
Let him in whom old Dutch blood flows, 22-5820
Lett's Globe, 7-1765
Liberty Bell, 22-5730
Life and thought have gone away, 14-3699
Life! I know not what thou art, 20-5267
Life Lesson, 16-4337
Life lies before me, but shut is the door, 22-5983
Light of Our Virtues, 11-2934
Like a blind spinner in the sun, 2-1929
Lilies of the valley chime, 12-3029
Lincoln, the Man of the People, 10-2663
Lion and the Mouse, 5-1157
Lion and the Unicorn, in color, 21-face 5636
Lisle, Monnet de
Marseillaise, 18-4773
Listen, my children, and you shall hear, 22-5721
Listen to the water mill, 18-4773
Little Betty Winkle she had a little pig,
11-2748
Little Bingo, with music, 11-2748
Little Boat, 16-4190
Little Bobby Snooks was fond of his books,
16-4068
Little Bo-peep has lost her sheep, with music,
5-1233
Little Boy Blue, come blow up your horn, 4-929
Little boy that cried, 17-4422
Little Busy Bee, 3-546
Little Children, Wake and Listen, 9-2190
Little Cock-Sparrow, 6-1408, 1470
Little drops of water, 4-1057
Little, I ween, did Mary guess, 17-4517
Little Jack Horner sat in a corner, 4-828; with
music, 4-986
Little lamb, who made thee? 3-712
Little maid, pretty maid, whither goest thou?
12-3318
Little Man in Leather, 12-3406
Little Miss Muffet, 5-1295
Little Miss Patty and Master Paul, in color,
18-3871
Little Nanny Etticoat, 4-827
Little Polly Wonders, 3-551
Little Robin Redbreast sat upon a tree, 14-3791
Little Sister, 14-3605
Little Sophy by the Seaside, 6-1513
Little Star, 5-1156
Little Things, 4-1057
Little Tom Tucker, 4-827
Little Tommy Tittlemouse, 10-2453
Little White Feathers, 12-3319
Little White Lily, 11-2822
Living for self and thinking of self, 6-1513
Logan, John E.
When summer comes, 12-4648
London in 1802, 15-3991
Long legs, crooked thighs, 12-3011
Long live the king in peace, 22-5821
Long years of bondage having ended, 22-5821
Longfellow, Henry Wadsworth
Arrow and the Song, 16-4188
Baby and the Brook, 16-4066
Bell of Atri, 24-6301
Bridge, 9-2238
Builders, 15-3992
Children's Hour, 12-3475
Day is done, 12-1978
Daybreak, 14-3789
Excelsior, 3-715
Happiest Land, 7-1800
Maidenhood, 22-5899
Memories, 23-5983
Norman Baron, 11-2817
Old Clock on the Stairs, 12-3176
Paul Revere's Ride, 22-5731
Psalm of Life, 3-546
Rain in Summer, 20-5265
Serenade, 9-2306
Ship of State, 4-926
Ships That Pass in the Night, 12-4773
Slave's Dream, 4-1058
Snow Flakes, 7-1873
Song of Birds, 17-4519
Song of Hiawatha, extracts, 15-3865-66;
20-5391
Three Kings, 19-1975
Tide Rises, the Tide Falls, 19-4977
To the River Charles, 14-3701
Village Blacksmith, 2-373
Wreck of the Hesperus, 1-105
Look over the wall, and I'll tell you why, in
color, 18-3870
Lord, by whose might the Heavens stand,
20-5391
Lord, It Belongs Not to My Care, 17-4421
Lord's Prayer in Verse, 17-4420
Lord Ullin's Daughter, 4-825
Lord, who art merciful as well as just, 12-3028
Lorelei, 8-1929
Loss of the Royal George, 2-480
Lost Doll, 17-4517
Lost Leader, 23-5982
Love and Friendship, 18-4898
Love, Death and Reputation, 22-5983
Love in tears, 22-5900

INDEX OF POETRY

Love Knot, 9-2241
 Love me, Sweet, with all thou art, 10-2664
 Love Will Find Out the Way, 18-4773
 Love, won or lost, is countless gain, 22-5900
 Lovelace, Richard
 To Lucasta, on going to the Wars, 22-5924
 Lover, Samuel
 Angels' Whisper, 11-2818
 Fairly Tempter, 13-3404
 Love's Reasonings, 21-5501
 Lowell, James Russell
 Aladdin, 19-4978
 Courtin', 6-1512
 Fatherland, 4-926
 Fountain, 3-713
 Incident in a Railroad Car, 19-5068
 June, 9-2238
 Parable, 20-5159
 Sower, 14-3792
 Stanza on Freedom, 17-4421
 Lucy, 3-712
 Lucy Gray, 7-1872
 Luke, Mrs.
 I Think When I Read, 20-5267
 Lullaby! O Lullaby, 16-4066
 Lullaby of an Infant Chief, 4-824
 Lynn, Ethel
 Weighing the Baby, 7-1800
 Lyte, H. F.
 Abide with me, 18-3991
 Officer's Grave, 7-1801

M

M. N. O., with music, 13-3317
 Macaulay, Lord
 How Horatius Kept the Bridge, 6-1403
 Spanish Armada, 17-4515
 Macarroll, James
 Royal Race, 20-5389
 Macdonald, George
 Baby, 3-548
 Better Things, 21-5500
 Little White Lily, 11-2822
 Over the Hill, 19-5064
 Wind and the Moon, 12-3178
 McGee, Thomas D'Arcy
 Arctic Indian's faith, 20-5389
 Jacques Cartier, 18-4648
 Mackay, Dr. Charles
 Deed and a Word, 18-4774
 Love's Reasonings, 21-5501
 Miller of Dee, 24-6302
 Sea-king's Burial, 13-3473
 There's a good time coming, boys, 14-3700
 William the Conqueror, 13-3103
 MacLagan, Alexander
 We'll ha'e nane but Highland Bonnets here, 22-5822
 McLellan, Isaac
 Death of Napoleon, 9-2307
 McLennan, William
 Hills o' Skye, 20-5388
 Mahoney, Francis Sylvester
 Bells of Shandon, 22-5898
 Maid of R. K. D., 22-5742
 Maiden! with the mock brown eyes, 22-5899
 Maidenhood, 22-5899
 Man Who Is Twelve Years Old, 21-5633
 Man's a Man for a' That, 18-4774
 Man's Good Name, 11-2934
 Man's Greatest Treasure, 11-2934
 Man's Requirements, 10-2664
 Maple leaf forever, 10-2506
 March, 5-1294
 March Meadows, 14-3605
 March of the Men of Harlech, 22-5822
 March winds and April showers, 11-2825
 Marching down to Armageddon, 15-3990
 Marco Bozzaris, 21-5633
 Maria intended a letter to write, 13-3475
 Mackham, Edwin
 Lincoln, the Man of the People, 10-2663
 Marlowe, Christopher
 Passionate Shepherd, 19-5065
 Marseillaise, 18-4772
 Mary had a little lamb, 20-5161
 Mary had a pretty bird, 14-3702
 Mary, Mary, quite contrary, 10-2455
 Mary Stuart's Farewell, 10-2448
 Massa's in the cold, cold Ground, 21-5632
 Master I have, and I am his man, 15-3869
 Matthew, Mark, Luke, and John, 4-828

Maud Miller on a summer's day, 13-3315
 Memories, 23-5983
 Memory, 15-3990
 Men of Harlech! in the hollow, 22-5822
 Men of Old, 17-4517
 Mendonca, Henrique L. de
 Portuguese National Hymn, 22-5822
 Mercantini
 Garibaldi's Hymn, 22-5820
 Meredith, William T.
 Farragut, 10-2450
 Merrily swinging on brier and weed, 10-2511
 Merry are the bells, in color, 9-2195
 Mexican National Hymn, 22-5823
 Mid pleasures and palaces though we may roam, 2-478
 Miles, Alfred H.
 Big and Little Things, 14-3701
 Miller, Emily M.
 Jesus bids us shine, 15-3992
 Miller, Joaquin
 Bravest battle that ever was fought, 18-4774
 Columbus, 3-547
 Miller, Thomas
 Industry of Animals, 11-2822
 Mother to Her Infant, 13-3404
 Spring Walk, 12-3176
 Sun, 6-1513
 Miller, William
 Wee Willie Winkie, 4-824
 Miller of Dee, 24-6302
 Million little diamonds, 10-2451
 Millions of massive raindrops, 18-4720
 Milton, John
 Extracts from, 14-3524; 22-5673-79
 On his blindness, 23-5985
 On May Morning, 5-1293
 To the Lord General Cromwell, 15-3991
 Milton! thou shouldst be living at this hour, 18-3991
 Mine be a cot beside a hill, 4-926
 Mine eyes have seen the glory, 22-5819
 Mine host of the Golden Apple, 12-3038
 Minnie and Winnie, 4-1059
 Minstrel Boy, 3-546
 Miss Kitty was rude at the table one day, 3-551
 Miss Poppy, 19-4897
 Miss Sophy, one fine sunny day, 16-4066
 Mitford, Mary Russell
 Joy of Life, 5-1157
 Molly, my sister, and I fell out, 16-4067
 Monday's child is fair of face, 20-5161
 Montgomery, James
 Daisy at Christmas, 19-4978
 Moore, Clement C.
 Visit from St. Nicholas, 9-2240
 Moore, Thomas
 Alas! how light a cause may move, 23-5982
 As down in sunless retreats, 8-1929
 Believe me, if all those endearing young charms, 23-5985
 Canadian Boat Song, 12-4649
 Harp that once through Tara's halls, 22-5898
 Last Rose of Summer, 6-1512
 Love and Friendship, 19-4898
 Minstrel Boy, 3-546
 Oft in the Stilly Night, 14-3790
 Poor Dog Tray, 13-3316
 She's Far From the Land, 14-3602
 Sound the Loud Timbrel, 21-5632
 Morning and Evening, 7-1867
 Morning, evening, noon, and night, 16-4185
 Morris, William
 Voice of Toil, 14-3791
 Moss Rose, 24-6303
 Mother, 6-1572
 Mother, may I go to swim? 17-4520
 Mother Mitchell one day lost her pussy, alack, 17-4523
 Mother, mother, the winds are at play, 21-5500
 Mother to Her Infant, 13-3404
 Mother's Kisses, 5-1157
 Mother's World, 10-2663
 Mountain and the Squirrel, 4-926
 Mounted Police, 18-4651
 Mouse and the Cake, 10-4187
 Mr. East gave a feast, 17-4520
 Much have I traveled, 10-2663
 Muir, Alexander
 Maple leaf forever, 10-2506
 Müller, Wilhelm
 Whither? 24-6303

INDEX OF POETRY

Mulock, Dinah Maria

Douglas, Douglas, Tender and True, 8-1928
 Multiplication is vexation, 4-929
 Musical Instrument, 7-1799
 My banks they are furnished with bees, 4-1057
 My beautiful my beautiful that standest
 meekly by, 3-714
 My boat is on the shore, 23-5983
 My child, when we were children, 24-6303
 My dear, do you know, 17-4522
 My fairest child, I have no song to give you,
 1-104
 My faith looks up to Thee, 18-4184
 My father he died, in color, 9-2309
 My father he left me three acres of land, 12-3042
 My good blade carves the casques of men, 4-1056
 My heart aches, and a drowsy numbness pains,
 11-2744
 My heart leaps up when I behold, 3-713
 My Heart's in the Highlands, 6-1574
 My house is red—a little house, 13-3477
 My Kate, 22-5900
 My Lady Wind, 21-5503
 My little old man and I fell out, 8-2134
 My lov'd, my honor'd, much respected friend,
 18-4063
 My Maid Mary, in color, 8-2192
 My Maryland, 10-2512
 My Menagerie, 9-2239
 My mind lets go a thousand things, 15-3990
 My mind to me a kingdom is, 8-4928
 My Mother, 4-824
 My Mother's Hands, 10-2664
 My Old Kentucky Home, 13-3402
 My parents bow, and lead me forth, 17-4519
 My parents sleep both in one grave, 13-3474
 My Playmate, 18-4976
 My Shadow, 1-103
 My Ships, 7-1798
 My soul, there is a country, 15-3992
 My strength is failing fast, 13-3473
 My true love hath my heart, and I have his,
 14-3789

N

Nalbandian

Hymn to Liberty, 22-5821
 Name in the Sand, 16-4186
 Nathan Hale, 6-1673
 Nation's Strength, 17-4517
 Naturalized Allen, 22-5732
 Nesting Hour, 14-3605
 New Pellsie, 14-3606
Newbolt, Henry
 Best School of All, 12-3178
Newman, Cardinal
 Lead, Kindly Light, 8-2013
 Night, by Blake, 23-5984
 Night, by Shelley, 22-5899
 Night has a thousand eyes, 23-5985
 Nightingale and Glow-worm, 3-712
 No need to the circus to go have I, 9-3239
 No stir in the air, no stir in the sea, 8-2131
 No sun, no moon, 17-4518
 No, trust me; she is peevish, sullen, froward,
 11-2934
 Noble heroes of the sea, 22-5822
 Noblest Roman, 11-2923
 Nonsense rhymes of Edward Lear, 4-1062;
 15-3994
 Norman Baron, 11-2817
 North wind doth blow, 5-1156
Norton, Mrs.
 Arab's Farewell to His Steed, 3-714
 Not a drum was heard, not a funeral note, 3-713
 Not gold, but only man can make, 17-4517
 November in England, 17-4518
 Now, all of you, give heed unto, 18-4720
 Now, he who knows old Christmas, 19-5066
 Now the bright morning star, day's harbinger,
 5-1293
 Now the day is over, 21-5502
 Now, what do you think, in color, 17-4339
 Nurse's Song, 7-1874
 Nymph's Reply to the Passionate Shepherd,
 8-2023

O

O, all you little Blackie-tops, in color, 3-718
 O beautiful for spacious skies, 23-5819
 O blithe new-comer, I have heard, 8-1927
 O, Boys, Carry me 'Long, 8-2239

O Captain! my Captain, 8-2023

O Dear! what can the matter be? with music,
 22-5901
 O fir-tree fine, 12-3040
 O God! it is a fearful thing, 12-3175
 O God! methinks it were a happy life, 11-3932
 O God, our help in ages past, 7-1801
 O leave this barren spot to me, 8-479
 O little lambs, the month is cold, 14-3005
 O Mammy's Pickaninny, 19-4899
 O Mary, go and call the cattle home, 8-478
 O Mother-My-Love, if you'll give me your hand,
 14-3793
 O, my love's like a red, red rose, 19-5065
 O! say, can you see, by the dawn's early light,
 22-5817
 O, say, what is that thing call'd light, 4-1057
 O ship incoming from the sea, 20-5389
 O Sweet Content, 8-2023
 O Thou that sendest out the man, 19-4717
 O! Wert Thou in the Caud Blast, 24-6300
 O, Wild West Wind, thou breath of Autumn's
 being, 23-6089
 Ode on Immortality, 14-3697
 Ode on the Death of Wellington, 18-4715
 Ode to the West Wind, 23-6089
 O'er a low couch the setting sun, 19-4186
 Of a' the airts the wind can blow, 20-5160
 Of all the gay birds that e'er I did see, 14-3794
 Of all the girls that are so smart, 14-3789
 Of all the thoughts of God that are, 21-5633
 Of Nelson and the North, 7-1872
 Off Rivière du Loup, 20-5389
 Officer's Grave, 7-1801
 Oft I had heard of Lucy Gray, 7-1872
 Oft I remember those whom I have known,
 23-5983
 Oft in the Stilly Night, 14-3790
Orlvia, Will E.
 Apple Winds, 20-5267
 Holyrood, 20-5158
 Oh, a dainty plant is the ivy green, 10-2449
 Oh, a wonderful stream is the river of Time,
 13-4718
 Oh! Columbia, the Gem of the Ocean, 22-5818
 Oh, deem not they are blest alone, 19-4899
 Oh, hush thee, my baby, thy sire was a knight,
 4-824
 Oh, look at the Moon, 12-3038
 Oh, my country, entwine on thy temples, 22-5823
 Oh, my pretty cock, 13-3477
 Oh! Paddy dear, and did you hear the news
 that's goin' round? 22-5824
 Oh, ring the bells, 13-3405
 Oh! say can you hear? 22-5824
 Oh, to be in England, 8-2023
 Oh, where and oh where is my little wee dog?
 17-4520
 Oh, where are all the good little girls? 13-3319
 Oh who is so merry, so merry, heigho! 22-5734
 Oh, who would keep a little bird confined?
 14-3604
 Oh, yea! who so lately were blithesome and gay,
 10-2451
 Oh, young Lochinvar is come out of the West,
 18-4711
O'Hara, Theodore
 Bivouac of the Dead, 21-5635
 Old Abram Brown is dead and gone, 8-2134
 Old Arm Chair, 9-2239
 Old Christmas, by Mary Howitt, 19-5066
 Old Christmas, by Sir Walter Scott, 9-2188
 Old Cloak, 14-3790
 Old Clock on the Stairs, 12-3176
 Old Familiar Faces, 14-3602
 Old Folks at Home, 6-1572
 Old Friends, 23-5985
 Old Ironsides, 6-1572
 Old King Cole was a merry old soul, 19-4900;
 with music, 19-4901
 Old Mother Hubbard, 10-2513
 Old Mother Twitchett had but one eye, 12-3041
 Old Woman and her pig, 23-5986
 Old woman, old woman, shall we go a-shearing?
 13-3338; 17-4520
 Old woman tossed up in a basket, 12-face 3042
 Old Woman, Tossed up in a Blanket, with
 music, 7-1724
 "Ole Tam on Bord-a Plouffe," 20-5387
 Omission, 19-4898
 On came the whirlwind—like the last, 10-2510
 On Christmas Eve I turned the spit, 17-4422
 On first looking into Chapman's Homer, 10-2663
 On his blindness, 23-5985

INDEX OF POETRY

- On Linden, when the sun was low, 4-1059
 On May morning, 8-1283
 On Saturday night, 14-3702
 On Sir Philip Sidney, 21-5197
 On the bridge of Avignon, 20-5162
 On the Grasshopper and Cricket, 18-4719
 On the green banks of Shannon, when Sheelah
 was high, 10-2449
 Once a little boy, Jack, was ever so good, 17-4422
 Once in Persia ruled a king, 2-479
 Once in Royal David's City, 8-2190
 Once on a time I saw a bear, 10-2514
 Once on a time Love, Death and Reputation,
 23-5983
 Once upon a midnight dreary, 18-4335
 One and one, 12-3319
 One hot summer day a hunter went out, 18-4776
 One I love, two I love, 22-5734
 One lesson, Nature, let me learn of thee, 20-5266
 One misty, moony morning, in color, 11-2825
 One misty morning, 12-3406
 One not learned, save in gracious household
 ways, 6-1572
 One, two, buckle my shoe, in color, 11-2826
 One, two, three, four, five, 13-3477
 One was a king, and wide domain, 21-5301
 Only a Baby Small, 11-2745
 Only a Boy, 21-5498
 Opportunity, 17-4420
O'Reilly, John Boyle
 Cry of the Dreamer, 18-4773
 Orpheus with his lute made trees, 11-2929
 Orsamer, Song, 23-5984
O'Shaughnessy, Arthur
 St. John the Baptist, 22-5729
 Work of the Poets, 16-4338
 Others abide our question. Thou art free,
 18-4065
 Our band is few, but true and tried, 6-1573
 Our land, our land, our Fatherland, 22-5820
 Our little systems have their day, 23-5985
 Our Norland, 18-4647
 Out and in the river is winding, 18-4630
 Out of the bosom of the air, 7-1873
 Out of the frozen earth below, 18-4773
 Over hill, over dale, 11-2929
 Over the Hill, 19-5064
 Over the mountains, 18-4773; 21-5635
 Over the river and through the wood, 19-4899
 Overland Mail, 10-2512
 Owl, 18-4772
- P**
- Pack clouds away, and welcome day, 13-3402
Palmer, Ray
 Faith, 18-4184
 Pan! Qu'est-ce qu'est là? 17-4423
 Papa, les petits bateaux, 16-4190
 Parable, 20-5159
 Parrot, 8-1294
 Parts of one stupendous whole, 12-3232
 Passing through a little wood, 19-4981
 Passionate Shepherd, 19-5065
 Pat-a-cake, pat-a-cake, baker's man, 4-1060
Patmore, Coventry
 Love in Tears, 22-5900
 Love serviceable, 23-5983
 Patriot, 18-4715
 Paul Revere's Ride, 22-5731
Payne, John Howard
 Home, Sweet Home, 2-478
 Peace, 18-3992
Peacock, Thomas Love
 Priest and the Mulberry Tree, 12-3316
 Pease-pudding hot, 8-1295
 Peg, peg, with a wooden leg, 14-3702
 Penny was a pretty girl, 7-1876
Perry, Nora
 Love Knot, 2-2241
 Pet Lamb, 8-1928
 Peter Bell: A Tale, 18-3989
 Peter, Peter, pumpkin eater, 16-4067
 Peter Piper picked a peck of pickled pepper,
 4-827
 Peter White will ne'er go right, 4-986
 Pictures in the Fire, 4-826
 Pled Piper of Hamelin, 2-370
Pierpont, John
 Warren's Address, 9-2306
 Pilgrim, 8-2022
 Pilgrim Fathers, 20-5158
 Pillowed and hushed on the silent plain, 18-4651
 Pink, small and punctual, 11-3878
 Piping Down the Valleys Wild, 21-5632
 Plains of Abraham, 20-5390
 Planting the Apple-tree, 20-5264
Platt, John James
 Rose and Root, 18-4990
 Playgrounds, 14-3606
 Please to Remember, 7-1807
Poe, Edgar Allan
 Bells, 11-2821
 Raven, 16-4335
 Post and the Bird, 21-5501
 Poet's Last Thoughts, 16-4335
 Poland's not a slave for ever while her sons
 alive remain, 22-5824
 Polly, put the kettle on, 4-979
 Polly's, Peg's, and Poppety's, 18-4971
 Poor babes in the wood, in color, 17-4521
 Poor Billy boy was music made, 12-3313
 Poor Dicky's dead, 13-3177
 Poor Dog Tray, 13-3316
 Poor little Betty is kind and sweet, 23-6132
 Poor lone Hannah, 12-3102
 Poor old Robinson Crusoe, 10-2454; 17-4520
Pope, Alexander
 Extract from, 12-3232
 Portuguese National Hymn, 22-5822
 Prairie greyhounds, 20-5388
 Praise of England, 11-2923
 Prayer, 12-3038
 Pretty Fisher-Maiden, 24-6303
 Pretty flowers, tell me why, 19-4982
 Pretty maid, pretty maid, 8-1295
 Priest and the Mulberry Tree, 12-3316
 Prince Flinikin and his mamma, 15-3870
 Princess, selections from, 17-4519, 23-5985.
Pringle, Thomas
 Afar in the Desert, 8-1929
 Prisoner of Chillon, 12-3175
Procter, Adelaide Anne
 Pictures in the Fire, 4-826
Procter, Bryan Waller: see Cornwall, Barry
 Prospect, 4-1056
 Psalm of Isaac, 2-516
 Punch and Judy fought for a pie, 16-4067
 Purple violets lurk, 11-2880
 Pussy-cat ate the dumplings, 14-3794
 Pussy-cat Mew jumped over a coal, 16-4068
 Pussy-cat Mole, 10-2455
 Pussy-cat, pussy-cat where have you been?
 10-2454
 Pussy sits beside the fire, in color, 17-4339
- Q**
- Quality of mercy is not strained, 11-2931
 Queen and the Flowers, 8-1927
 Queen Anne, Queen Anne, she sits in the sun,
 12-3042
 Queen Ma., 8-1156; 14-3700
 Quiet Work, 20-5266
- R**
- Rain, 1-102
 Rain in Summer, 20-5265
 Rain is raining all around, 1-102
 Rain on the Roof, 21-5502
 Rainbow, by John Keble, 7-1871
 Rainbow, by Wordsworth, 3-713
Raleigh, Sir Walter
 Conclusion, 14-3791; 21-5413
 Nymph's Reply to the Passionate Shepherd,
 8-2023
 Ramène Tes Moutons, 16-4190
Randall, James Ryder
 My Maryland, 10-2512
 Why the Robin's Breast is Red, 18-3990
Rands, William Brighty
 I saw a New World, 24-6302
 World, 4-826
 Rapid, 18-4651
 Raven, 16-4335
Read, T. Buchanan
 Sheridan's Ride, 9-2307
 Reaper, 6-1575
 Recessional, 19-4898
 Reconciliation, 23-5985
 Red, Red Rose, 19-5065
 Red River Voyageur, 18-4650
 Remember, remember, 17-4520
 Rest, 24-6304

INDEX OF POETRY

- Rest is not quitting the busy career, 24-6304
 Retired Cal, 7-1800
 Revenge, 18-1183
 Ride a cock horse, 24-6205
 Ride away, ride away, Johnny shall ride, 9-2182
Riley, James Whitcomb
 Land of Thus-and-So, 18-5065
 Life Lesson, 18-4337
 Ring Out, Wild Bells, 9-2191
 Ring-ting! I wish I were a primrose, 4-1057
 Rise up, rise up, now, Lord Douglas, she says, 23-6088
 Rise, ye Serbians, rise as one, 22-5823
 River, 11-2820; 20-5389
 River that in silence windest, 14-3701
 Robert Barnes, fellow fine, 12-3042
 Robert of Lincoln, 10-2511
 Robin and Richard were two pretty men, 4-828
 Robin and the wren, 14-3702
 Robin Hood, Robin Hood, 19-4900
 Robin Redbreast, 2-480
 Robin the Bobbin, the big, greedy Ben, 10-2453
 Robin-a-Bobin, 18-4068
 Robin-Friend has gone to bed, 14-3605
 Rock-a-by, baby, thy cradle is green, 15-3869
 Rock-a-by Lady, 19-4979
 Rock of Ages, 12-3038
Rogers, Samuel
 Geneva, 8-1926
 Wish, 4-926
Rossard, Pierre de
 Welcome to Spring, 12-3038
Roscoe, William
 Butterfly's Ball, 4-1058
 Rose, 22-5899
 Rose and Root, 15-3990
Rossetti, Christina
 Goblin Market, 7-1867
 Up-Hill, 18-4772
Rossetti, D. G.
 Sudden Light, 16-4187
 Round de meadows am a-ringing, 21-5632
 Rowley Powley, pudding and pie, 3-551
 Royal Race, 20-5389
 Rub-a-dub-dub, 13-3477
 Ruin seize thee, ruthless king! 24-6299
 Rule, Britannia, 3-548
Runeberg
 Vart Land, 22-5820
 Russia, 22-5821
- S
- Sad Ventures, 20-5267
 Said a people to a poet, 21-5501
 Said the wind to the moon, I will blow you out, 12-3178
 Sail on, sail on, O ship of state, 4-926
 St. John the Baptist, 22-5729
 St. Swithin's Day, if thou dost rain, 7-1724
 Sally in our Alley, 14-3789
 Sammy Smith would drink and eat, 4-924
 Sandpiper, 18-4338
 Sands of Dee, 2-478
Sangster, Charles
 Our Norland, 18-4647
 Plains of Abraham, 20-5390
 Rapid, 18-4651
Sangster, Margaret
 Omission, 18-4898
 Say not, because he did no wondrous deed, 21-5498
 Say Not the Struggle Naught Availeth, 11-2822
Seantlebury, Elizabeth
 Laughing Brook, 19-4899
Schiller, Johann C. F.
 Extract from, 21-5523
Schneckenburger
 Die Wacht am Rhein, 22-5822
 Scots, wha hae wi Wallace bled, 4-826
Scott, Duncan Campbell
 Off Rivière du Loup, 20-5389
Scott, Frederick George
 Colors of the Flag, 20-5390
 Hymn of Empire, 20-5391
 River, 20-5389
 Unnamed lake, 18-4649
Scott, Sir Walter
 Jock of Hazeldean, 7-1874
 Last Charge of the French at Waterloo, 10-2510
 Lay of the Last Minstrel, 11-2819
 Lullaby of an Infant Chief, 4-824
 Old Christmas, 9-2188
Scott, Sir Walter
 Sound Loud the Clarion, 13-3404
 Time, 21-5498
 Young Lochinvar, 18-4771
Sea! 18-4896
 Sea-gull, sea-gull, sit on the sand, 4-1060
 Sea-king's Burial, 13-3473
 See the kitten on the wall, 12-3476
 See-saw, Margery Daw, with music, 4-827
 See-saw, sacaradown, 10-2514
 Serenade, 9-2306
 Servia, 22-5823
Service, Robert W.
 Mounted Police, 18-4651
 Seven Ages of Man, 11-2935
 Seven Times One, 13-3476
 Shakespeare, 18-4065
Shakespeare, William
 Ariel's Song, 2-331
 As You Like It, extracts from, 11-2929, 2935
 Court of Fairyland, in color, 2-frontis.
 Epitaph of, 21-5582
 Extracts from, 6-1585; 11-2882; 18-4654; 21-5584, 5588
 Friends and Flatterers, 11-2933
 Hamlet, extract from, 11-2934
 Julius Caesar, extracts from, 11-2931-33, 2935
 King Henry IV, extract from, 11-2935
 King Henry V, extracts from, 11-2933
 King Henry VI, extracts from, 11-2932, 2935
 King Henry VIII, extracts from, 11-2929-30
 King John, extract from, 11-2933-35
 Love's Labour's Lost, extracts from, 11-2929, 2935
 Macbeth, extract from, 11-2935
 Measure for Measure, extracts from, 11-2934-35
 Merchant of Venice, extracts from, 11-2934
 Midsummer Night's Dream, extracts from, 11-2929
 Much Ado About Nothing, extract from, 8-2023
 Othello, extract from, 11-2934
 Richard II, extracts from, 11-2933-34
 Sayings from Shakespeare, 11-2935; 13-3255
 Silvia, 14-3791
 Songs, 11-2929
 Troilus and Cressida, extract from, 11-2935
 Two Gentlemen of Verona, extract from, 11-2934
 Under the greenwood tree, 19-4899
 Shall I sing? says the lark, 13-3405
 Shall I, wasting in despair, 23-5984
Shanley, Charles Dawson
 Walker of the Snow, 18-4650
 She dwelt among the untrodden ways, 3-712
 She has laughed as softly as if she sighed, 16-4187
 She is far from the land, 14-3602
 She Walks in Beauty, 13-3403
 She Was a Phantom of Delight, 13-3403
 She was not as pretty as women I know, 22-5900
 Shed no tear! O, shed no tear, 3-712
Sheldon, Lurana
 Naturalized Alien, 22-5732
 When the call is sounded, 22-5732
Shelley, Percy Bysshe
 Autumn, 9-2238
 Cloud, 20-5263
 Night, 22-5899
 Ode to the West Wind, 23-6089
 Skylark, 20-5157
Shenstone, William
 Shepherd's Cot, 4-1057
 Shepherd boy's song in "Pilgrim's Progress," 14-3791
Shepherdess, 18-4190
 Shepherd's Happy Life, 11-2932
 Sheridan's Ride, 9-2307
 Ship of State, 4-926
 Ships That Pass in the Night, 19-4773
 Shock-headed Peter, in color, 18-4775
 Should auld acquaintance be forgot, 11-2822
 Shuffle-Shoon and Amber-Locks, in color, 15-3867
 Shy bird of the silver arrows of song, 13-3460
Sidney, Sir Philip
 Barnum, 14-3789
 Sigh, 19-4978
 Sigh no more, Ladies, sigh no more, 8-2023
 Silence augmenteth grief, writing increaseth rage, 21-5497
 Silent Voices, 9-2239
Sill, Edward Howland
 Opportunity, 17-4420
 Silvia, 14-3791

INDEX OF POETRY

- Simon Brodie had a cow, 14-3702
Simple Simon met a pleman, 20-5269
Sing a song of 'slapence, with music, 3-716
Sing, sing, what shall I sing, 4-827
Sing, ye ripening fields of wheat, 18-4651
Sir Galahad, 4-1086
Sir Sidney Smith, 7-1871
Skylark, 20-5157
Slave's Dream, 4-1058
Sleep, 21-5633
Sleep, baby, sleep, 13-3318
Sleep, baby, sleep, 22-5898
Sleep, Beauty Bright, 7-1875
Sleep, sonny darling, your mother's delight,
12-3039
Sluggard, 3-712
Slumber, my darling, no danger is near,
13-3404
Smiley, Maurice
Man Who Is Twelve Years Old, 21-5633
Smith, Samuel Francis
My Country, 'tis of thee, 22-5819
Snow Flakes, 7-1873
Snow Storm, 13-3404
So are the stars and the arching skies, 19-5067
So bashful when I spied her, 11-2879
So work the honey bees, 11-2933
Solitude, 18-4717
Solomon Grundy, 10-2454
Some little mice sat in a barn to spin, 11-2748,
12-3042
Somebody crawls into mamma's bed, 3-544
Somebody's Mother, 20-5265
Somewhat back from the village street, 12-3176
Somewhere it is always light, 6-1513
Son of My Heart, 12-3039
Song my paddle sings, 18-4649
Song of Birds, 17-4519
Song of Hiawatha, 18-3865
Song of Marion's Men, 6-1573
Song of the Camp, 8-1928
Song of the Golden Sea, 18-4651
Song of the Nightingale, 2-479
Song of the Shirt, 11-2818
Song of the Two Hares, 12-3039
Sonnet at Norge, 22-5821
Sonnet, 23-5985
Sons of dear Norway, O proud and ancient king-
dom, 22-5821
Soon after the late snow has melted, 11-2879
Sorrow, 17-4518
Sound, Sound the Clarion, 13-3404, with picture,
19-5062
Sound the Loud Timbrel, 21-5632
Southey, Robert
Battle of Blenheim, 3-545
Cataract of Lodore, 5-1292
Father William, 3-546
Inchcape Rock, 8-2131
Prayer, 12-3038
Traveler's Return, 8-2131
Southrons, hear your country call you, 22-5818
Sower, 14-3792
Spacious Firmament on High, 18-4066
Spanish Armada, 17-4515
Speak Gently, 16-4337
Speed on, speed on, good Master, 18-4650
Spenser, Edmund
Extracts from, 21-5484, 5186
Spider and the Fly, 14-3601
Spofford, Harriet Prescott
Sigh, 19-4978
Spring Walk, 12-3176
Stand! the ground's your own, my braves,
9-2306
Stanza on Freedom, 17-4421
Star-Spangled Banner, 22-5817
Stars, 3-715
Stars of the summer night, 9-2306
Stately tree, 21-5484
Stay near me—do not take thy flight! 18-4065;
22-5729
Stedman, Edmund Clarence
Discoverer, 17-4420
Stevenson, Robert Louis
Armies in the Fire, 1-103
Epitaph, 9-2329
Land of Nod, 4-1059
My Shadow, 1-103
Rain, 1-102
Travel, 5-1154
Unseen Playmate, 3-714
Still, still with Thee, when purple morning
breaketh, 22-5898
Stoddard, Richard Henry
Birds, 15-3991
Flight of the Arrow, 17-4420
Flight of Youth, 20-5266
Stormy Petrel, 17-4518
Story of a Blackamoor, in color, 18-4777
Story of Fidgety Philip, in color, 18-4775
Story of Flying Robert, in color, 18-4778
Story of Life, 19-5067
Stowe, Harriet Beecher
When I awake I am still with thee, 22-5898
Straight is the path of duty, 6-1582
Strandberg
Ur Svenska Hjertans, 22-5821
Stream and the Ocean, 10-2449
Strong Son of God, Immortal Love, 15-3985
Such beautiful, beautiful hands, 10-2664
Suckling, Sir John
Ornaments' Song, 23-5984
Sudden Light, 18-4187
Sum, sum, sum, 15-3996
Summer has doff his latest green, 23-5985
Summer is a-coming in, 9-2237
Summer's day, 10-2451
Sun, 6-1573
Sun is a glorious thing, 18-4188
Sun of my soul, thou Saviour dear, 6-1574
Sunset and evening star, 6-1575
Suppose the Little Cowslip, 20-5160
Sur le pont d'Avignon, 20-5162
Surely, good sir, you follow me, 22-5742
Sweet and low, sweet and low, 2-478
Sweet Auburn, loveliest village of the plain,
22-5727
Sweet is Childhood, 19-5067
Sweet to the morning traveler, 8-2131
Sweetest Lives, 6-1572
Swiftly walk over the western wave, 22-5899
Swiss National Hymn, 22-5823
Sylvia, song to, 21-5588
- T**
- Tabb, John Banister**
In Absence, 6-1575
Taffy was a Welshman, Taffy was a thief, 4-1060
Tate, Nahum
Twenty-Third Psalm, 3-548
Taylor, Bayard
Bedouin Song, 19-5064
Song of the Camp, 8-1928
Taylor, Benjamin Franklin
Isle of Long Ago, 18-4718
Taylor, Jane
Good-night, 2-480
Horse, 10-2510
Little Star, 5-1156
My Mother, 4-824
Taylor, Jeffreys
Lion and the Mouse, 5-1157
Young Mouse, 4-924
Teach me, my God and King, 15-3991
Tears, Idle Tears, 7-1799
Teeny-Weeny, 21-5504
Tell me not, in mournful numbers, 3-546
Tell me not, sweet, I am unkind, 23-5984
Tell tale tit, 6-1582
Tender-handed stroke a nettle, 14-3603
Tennyson, Alfred, Lord
Beggar Maid, 4-824
Break, Break, Break, 19-5064
Brook, 1-103
Bugle, 12-3403
Charge of the Light Brigade, 7-1798
Cradle Song, 7-1875
Crossing the Bar, 6-1575
Death of the Old Year, 9-2191
Defence of Lucknow, 14-3787
Deserted House, 14-3699
England and America in 1782, 18-4717
Extracts from, 18-3909, 18-4277, 18-4814, 4853
Flower in the crannied wall, 5-1195, 11-2877
In Memoriam, extracts, 15-3985, 23-5983, 5985
Locksley Hall, extract from, 19-5067
Minnie and Winnie, 4-1059
Mother, 6-1572
Ode on the Death of Wellington, 18-4715
Owl, 18-4772
Princess, The, selection, 17-4519; 23-5985
Quotations from, 15-3909; 18-4814
Reconciliation, 23-5985
Revenge, 16-4183
Ring Out, Wild Bells, 9-2191
Silent Voices, 9-2339

INDEX OF POETRY

- Tennyson, Alfred, Lord**
 Sir Galahad, 4-1086
 Sweet and Low, 2-478
 Tears, Idle Tears, 7-1799
 Ulysses, 12-4718
Tennyson-Turner, G.
 Letty's Globe, 7-1765
 Little Sophy by the Seaside, 6-1513
 Ternarie of Littles, 11-2820
 Terrible Ball, 7-1876
Thackeray, William Makepeace
 Cane-bottomed Chair, 21-5631
 Tragic Story, 6-1157
Thanksgiving Day, 19-4899
Thaxter, Cella
 Sandpiper, 10-4338
 The angel of the flowers one day, 24-6303
 The Assyrian came down like the wolf on the fold, 9-2306
 The autumn is a gipsy, when the frost is in the air, 22-5899
 The baby new to earth and sky, 16-4277
 The bairnies cuddle doon at night, 14-3603
 The baker's wife has sacks of gold, 17-4522
 The beginning of eternity, 13-3433
 The blessing of my later years, 13-4749
 The boy stood on the burning deck, 5-1294
 The bravest battle that ever was fought, 12-4774
 The breaking waves dashed high, 20-5158
 The Chinaman praises his Tea, 22-5712
 The cock doth crow, 6-2134
 The cock is crowing, 5-1294
 The cock's on the housetop, blowing his horn, 4-929
 The cuckoo and the jackass, 14-3795
 The cuckoo's a bonny bird, 13-3318
 The curfew tolls the knell of parting day, 2-2021
 The current that with gentle murmur glides, 21-5584
 The day is done, and the darkness, 19-4978
 The despot's heel is on thy shore, 10-2512
 The dew was falling fast, the stars began to blink, 9-1925
 The dove says, "Coo, Coo, what shall I do?" 22-5734
 The fair maid, who, at the First of May, 5-1295
 The fairest action of our human life, 11-2745
 The first Nowell the Angel did say, 19-4976
 The flag—it stands for hearth and home, 22-5732
 The frost looked forth one still, clear night, 20-5156
 The frugal snail with forecast of repose, 16-4336
 The girl in the lane that couldn't speak plain, 11-2748
 The good dame looked from her cottage, 7-1797
 The gossip of the village—see, in color, 17-4339
 The graceful Columbine, all blushing red, 11-2883
 The grave old clock on the mantelpiece, 19-4980
 The gray Hoss-Chestnut's little hands unfold, 11-2878
 The greenhouse is my summer-seat, 12-3177
 The groves were God's first temples. Ere man learned, 10-2449
 The hands are such dear hands, 19-4898
 The harp that once through Tara's Halls, 22-5898
 The hart he loves the high wood, 17-4520
 The hill of success may be steep, boys, 6-1513; 13-3402
 The horned moon, with one bright star, 16-4112
 The hunt is up, the hunt is up, 17-4516
 The king from the council chamber, 20-5264
 The King of Clubs, he often drubs, 14-3702
 The King of France, and four thousand men, in color, 9-2308
 The King of France went up the hill, 6-2134
 The King was on his throne, 6-2133
 The King was sick, his cheek was red, 1-104
 The land I claim claims me, 22-5732
 The leaves are falling; so am I, 14-3790
 The life of man, 17-4120
 The lilies of the valley chime, 12-3039
 The little birds are singing, 11-2746
 The Lord my pasture shall prepare, 3-548
 The lucid interspace of world and world, 15-3909
 The lute-voice birds rise with the light, 11-2822
 The man in the moon, 3-2134
 The man in the wilderness asked me, 14-3702
 The melancholy days are come, 12-4719
 The minstrel boy to the war has gone, 3-546
 The monarch oak, the patriarch of the trees, 14-3524
 The moon held court in Holyrood, 20-5158
 The mountain and the squirrel, 4-926
 The muffled drum's sad roll has beat, 21-5635
 The night has a thousand eyes, 23-5985
 The noon was shady, and soft airs, 2-2132
 The North Wind doth blow, 5-1156
 The Owl and the Pussy Cat went to sea, 20-5161
 The path by which we twain did go, 22-5982
 The pines were dark on Ramoth hill, 19-4976
 The poetry of earth is never dead, 12-4719
 The pure, the bright, the beautiful, 11-3745
 The purest treasure mortal times afford, 11-3934
 The quality of mercy is not strained, 11-2934
 The Queen of Hearts, 6-1410
 The rain is raining all around, 1-102
 The robin and the red-breast, 13-3405
 The Robin and the Wren, 14-3702
 The Robin in the cherry-tree, 13-3464
 The Rock-a-by Lady from Hush-a-by Street, 12-4979
 The rose aloft in sunny air, 15-3990
 The saffern swarms swing off from all the willows, 11-2878
 The Saviour, bowed beneath His cross, climbed up the dreary hill, 15-3990
 The Sea! the Sea! the open Sea! 19-4896
 The shades of night were falling fast, 3-715
 The silver sea, 16-4313
 The sorrow that nobody mentions, 17-4518
 The spacious firmament on high, 16-4066
 The splendor falls on castle walls, 13-3403
 The stars of midnight shall be dear, 12-4749
 The stately homes of England, 4-925
 The streamlet down from the mountainous glen, 10-2449
 The sun descending in the West, 23-5984
 The sun is a glorious thing, 16-4188
 The sun is careering in glory and might, 5-1157
 The sun is down, and time gone by, 4-1059
 The sun, one fine evening on high, 13-3405
 The sun shines bright in the old Kentucky home, 13-3402
 The sun was shining on the sea, 6-1576
 The sweetest lives are those to duty wed, 6-1572
 The tide rises, the tide falls, 19-4977
 The time so tranquil is and still, 10-2451
 The warm sun is falling, the bleak wind is wailing, 9-2238
 The way was long, the wind was cold, 11-2819
 The white dove sat on the castle wall, 17-4339
 The wind one morning sprang up from sleep, 2-374
 The woman was old and ragged and gray, 20-5265
 The woman's cause is man's; they rise or sink, 17-4519
 The Year had all the Days in charge, 21-5501
 The year's at the spring, 3-713
 The yellow violet's modest bell, 11-2382
 Then the little Hiawatha, 20-5391
 There are gains for all our losses, 20-5266
 There are sounds, like flakes of snow falling, 13-3469
 There dwelt a miller hale and bold, 24-6302
 There is a farmer who is YY, 22-5742
 There is a flower, a little flower, 19-4978
 There is a pleasure in the pathless woods, 18-4717
 There is in the wide, lone sea, 7-1801
 There is thy gold; worse poison to men's souls, 6-1585
 There, little girl, don't cry, 16-4337
 There lived a sage in days of yore, 5-1157
 There once was a bird that lived up in a tree, 19-5068
 There sat one day in quiet, 7-1800
 There was a fern on the mountain, 19-4897
 There was a frog lived in a well, 20-5268
 There was a jolly miller, 9-2225; 14-3642
 There was a king in olden days, 6-1927
 There was a king met a king, 12-3041
 There was a little boy and a little girl, 6-2134
 There was a little boy went into a field, 11-3748
 There was a little girl who had a little curl, 3-551
 There was a little man, and he had a little gun, 15-3869
 There was a little man who wooed a little maid, 16-4189
 There was a little rabbit sprig, 6-1582
 There was a man, and he had naught, in color, 6-1578
 There was a man, and he went mad, 5-1296
 There was a man of Thessaly, 12-3042
 There was a monkey climbed up a tree, 4-1061

INDEX OF POETRY

- There was a sound of revelry by night, 21-5634
 There was a time when meadow, grove, and stream, 14-3697
 There was a young lady of Butte, 4-1062
 There was a young lady of Portugal, 15-3994
 There was a young lady of Russia, 15-3994
 There was a youth, a well beloved youth, 21-5498
 There was an archbishop named T8, 22-5742
 There was an old lady all drossed in silk, 15-3319
 There was an old lady of Chertsey, 15-3994
 There was an old man, 16-4189
 There was an old man at a casement, 15-3995
 There was an old man in a boat, 15-3995
 There was an old man in a pew, 15-3994
 There was an old man in a tree, 3-561
 There was an old man of Aosta, 15-3994
 There was an old man of Apulia, 15-3994
 There was an old man of Coblenz, 4-1062
 There was an old man of Corfu, 4-1062
 There was an old man of Kilkenny, 4-1062
 There was an old man of Nepal, 15-3995
 There was an old man on some rocks, 15-3995
 There was an old man who said Hush, 4-1062
 There was an old man with a flute, 15-3995
 There was an old man with a poker, 15-3994
 There was an old person of Basing, 15-3994
 There was an old person of Chilli, 15-3995
 There was an old person of Dover, 15-3995
 There was an old person of Dutton, 4-1062
 There was an old person of Mold, 4-1062
 There was an old person of Rhodes, 15-3994
 There was an old person of Sparta, 4-1062
 There was an old woman, and what do you think, 10-2455
 There was an old woman, as I've heard tell, in color, 4-face 928
 There was an old woman called Nothing-at-all, 22-5734
 There was an old woman lived under a hill, 4-828
 There was an old woman toss'd up in a blanket, with music, 7-1724
 There was an old woman tossed in a basket, in color, 7-face 1723
 There was an old woman who had three sons, 12-face 3042, 18-1720
 There was an old woman who lived in a shoe, in color, 4-face 927
 There was an owl lived in an oak, 22-5731
 There were once two cuts of Kilkenny, 16-4064
 There were three jolly Welshmen, 17-4424
 There were three sisters in a hall, 16-1067
 There were two blackbirds, 4-828
 There's a dear little home in Good-Children Street, 8-2024
 There's a good time coming, boys, 14-3700
 There's a man that I know, 21-5633
 There's a neat little clock, 13-3317
 There's a ship lies off Dunvegan, 20-5388
 There's a song in the air, 13-3475
 There's all the difference in the world, 13-3476
 There's no dew left on the daisies and clover, 13-3476
 There's nothing like a daddie, 19-1902
 There's Room at the Top, 6-1513
 There's something in a flying horse, 15-3989
 They are slaves who fear to speak, 17-1421
 They are such tiny feet, 16-1066
 They dined all alone at 8, 22-5742
 They glide upon their endless way, 3-715
 They say that God lives very high, 3-548
 They that wash on Friday, 13-3317
 They told me, Heracitus, they told me you were dead, 21-5632
 They will come from the hill and the valley, 22-5732
 Things That Never Die, 11-2745
 Thirty days hath September, 4-827
 Thirty white horses upon a red hill, 12-3041
 This England never did, nor ever shall, 11-2933, 21-5554
 This I beheld, or dreamed it in a dream, 17-4420
 This is the house that Jack built, 22-5733
 This little pig went to market, 4-828
 This royal throne of kings, this scepter'd isle, 11-2933, 21-5554
 This was the noblest Roman of them all, 11-2933
 This winter's weather it waxeth cold, 14-3790
 This world is too much with us, 23-5983
 Thomas a Tattamus took two T's, 16-4189
Thompson, Francis
 Abstract from poetry of, 14-3587-88
Thomson, James
 Rule, Britannia, 3-548
Thorpe, Rose Warwick
 Curfew Bell, 12-3037
 Thou blossom bright with autumn dew, 19-4899
 Though you shall lodge with me this night, 7-1811
 Three Blind Mice, with music, 4-929
 Three fishers went sailing away to the west, 10-2510
 Three hunters together a deer-stalking went, 15-3873
 Three kings came riding from far away, 19-4975
 Three little girls were sitting on a rail, 15-3871
 Three Old Ladies, 13-3319
 Three tablees took out their cats to tea, in color, 15-3871
 Three wise men of Gotham, 10-2455
 Three Years She Grew, 18-4749, 19-4977
 Threshold, 23-5983
 Thy Way, Not Mine, O Lord, 16-4065
 Thyself and thy belongings, 11-2934
 Tide River, 10-3664
 Tiger, tiger, burning bright, 5-1157
Tilton, Theodore
 All Things shall Pass Away, 2-479
 Time, 21-5498
 Time's glory is to calm contending kings, 21-5588
 'Tis a lesson you should heed, 13-3476
 'Tis sweet to hear the merry lark, 2-479
 'Tis the last roe of summer, 8-1512
 'Tis the voice of a sluggard; I heard him complain, 3-712
 Tit-tit-toe, 10-2590, 18-4189
 To a Butterfly, 16-4065, 22-5729
 To a Mountain Daisy, 17-4516
 To a Nightingale, 11-2743
 To a Skylark, 21-5502
 To a Waterfowl, 11-2820
 To Anthea, 14-3789
 To drum-beat and heart-beat, 6-1573
 To Lucasta, on going to the wars, 23-5981
 To market, to market, to buy a fat pig, 4-828
 To my Sister, 24-6303
 To the Cuckoo, 8-1927
 To the Fringed Gentian, 19-4899
 To the Lord General Cromwell, 15-3991
 To the River Charles, 14-3701
 To the Skylark, 8-2133
 To Thomas Moore, 23-5983
 Toll for the brave, 2-480
Tollens, Hendrik Van
 Wie Nierlansch, 22-5820
 Tom Bowling, 7-1801
 Tom, Tom, the piper's son, 10-2454
Toplady, Augustus M.
 Rock of Ages, 12-3038
 Tracena Regele, 22-5821
 Tragic Story, 5-1157
 Travel, 5-1154
 Traveler, what lies over the hill? 19-5064
 Traveler's Return, 8-2131
 Trip upon trendies, in color, 14-3703
Trowbridge, John Townsend
 Darius Green and his Flying-Machine, 23-6085
 True Greatness, 11-2745
 True Growth, 7-1874
 Try again, 13-3476
 Turn, turn, thy hasty foot aside, 7-1871
Turner, Charles Tennyson: see Tennyson-
 Turner, Charles
Turner, Mrs. Elizabeth
 Ambitious Sophy, 16-4066
 Greedy Boy, 4-824
 How to Write a Letter, 13-3475
 'Twas in the prime of summer-time, 8-2129
 'Twas on a summer morning, 19-4897
 'Twas once upon a time, 14-3794
 'Twas the night before Christmas, when all through the house, 8-2240
 Tweedledum and Tweedledee, in color, 21-5504
 Twenty-third Psalm, 3-548
 Twilight Song, 14-3605
 Twinkle, twinkle, little star, 5-1156
 'Twixt a hill and hollow, hollow pass, 12-3039
 Two Arniees, 20-5159
 Two frogs fell into a milk-pail deep, 13-3405
 Two little boys named Willie, 11-2746
 Two little dogs sat by the fire, 14-3702
 Two little dogs were basking in the cinders, 14-3794
 Two little girls are better than one, 12-3319

INDEX OF POETRY

Two little kittens, one stormy night, in color, 17-4340
 Two Men, 21-5501
 Two pigeons flying high, 2-359
 Two Robin Redbreasts built their nest, 15-3860
 Two sticks and an apple, 5-1158
 Tying her bonnet under her chin, 9-2241

U

U. C. I. D. K., 22-5742
 Ugly Princess, 17-4519
Uhland, Ludwig
 Castle by the Sea, 24-6304
 Ulysses, 18-4718
 Uncle Sam's Young Army, 13-3474
 Under a spreading chestnut tree, 2-373
 Under a loadstool, 15-3993
 Under my window, 10-2661
 Under the greenwood tree, 11-2929; 19-4899
 Under the wide and starry sky, 9-2329
 Under the window is my garden, in color, 15-3870
 Unnamed Lake, 18-4649
 Unseen Playmate, 3-714
 Until this grain of sand, 22-5822
 Up from the meadows rich with corn, 19-4895
 Up from the South at break of day, 9-2307
 Up-Hill, 18-4772
 Up-hill and down dale, 13-3318
 Up the airy mountain, 3-547
 Up with me! up with me into the clouds, 21-5502
 Upon a time a neighing steed, 12-3177
 Upon St. Paul's steeple stands a tree, 15-3860
 Upon yon nearest rock top, 20-5161
 Ur Svenska Hjärtans, 22-5821
 Useful Plough, 5-1294

V

Valediction, 6-1572
Van Dyke, Dr.
 Four Things, 21-5633
 God sends Love to You, 13-3475
Vart Land, 22-5820
Vaughan, Henry
 Peace, 15-3992
 Vision, 10-2451
 Village Blacksmith, 2-373
 Vision, 10-2451
 Vision of Belshazzar, 8-2133
 Vision of the Future, 19-5067
 Visit from St. Nicholas, 9-2240
 Voice of Toil, 14-3791
 Voyageur on golden air, 13-3457

W

Wacht am Rhein, 22-5823
 Waken, Christian children, 9-2190
 Walker of the Snow, 18-4650
Waller, Edmund
 Rose, 22-5899
 Walrus and the Carpenter, in color, 6-1576
 War begets Poverty, 23-5982
 Warren's Address to the American soldiers, 9-2306
 Wash me and comb me, 13-3318
 Wassail! wassail! all over the town, in color, 17-4341
Watts, Isaac
 Cradle Song, 22-5900
 Little Busy Bee, 3-546
 O God, our Help in Ages Past, 7-1801
 Sluggard, 3-712
Waugh, Edwin
 Christmas Morning, 9-2189
 Way Down upon the Swanee River, 6-1572
 Wayward Daughter's Fate, 11-2934
 We are all in the dumps, in color, 11-2825
 We are the music-makers, 16-4338
 We are three brethren out of Spain, 15-3868
 We are Uncle Sam's young army, 13-3474
 We had a pleasant walk to-day, 12-3176
 We have been o'er land and sea, in color, 2-frontis.
 We have no Dryads in our woods, 18-4647
 We just shake hands at meeting, 23-5985
 We live in deeds, not years; in thoughts, not breaths, 4-1057

We should fill the hours with the sweetest things, 13-3408
 We worship the spirit that walks unseen, 20-5389
 Wearing o' the Green, 22-5824
Weatherly, Frederic E.
 Discontented Apples, 11-2746
 Jealous Jack Frost, 9-2190
 Miss Poppy, 19-4897
 River, 11-2820
 What Bobbie Would Like, 14-3604
 What Might Have Been, 11-2746
 Wee, modest, crimson-tipped flower, 17-4516
 Wee Willie Winkie, in color, 4-824; 11-2825
 Weighing the Baby, 7-1800
 Welcome to Spring, 12-3038
 We'll ha'e nae but Highland Bonnets here, 22-5822
 Were I a birdie, too, 12-3039
Wesley, Charles
 Gentle Jesus, meek and mild, 19-5067
 Jesu, Lover of my Soul, 17-4421
 West wind, blow from your prairie nest, 18-4649
Westwood, Thomas
 Mine Host of the Golden Apple, 12-3038
 Under my window, under my window, 10-2664
 What are little boys made of? 10-2455; with music, 20-5162
 What Bobbie Would Like, 14-3604
 What Does It Matter, 21-5501
 What does little birdie say, 7-1875
 What Every Wise Child Should do, 21-5636
 What Everyone Knows, 4-826
 What I live for, 19-5060
 What is it you ask me, darling? 4-826
 What is the blue on our flag, boys? 20-5390
 What is the meaning of thy song, 21-5501
 What is the news of the day? in color, 11-2825
 What is the rhyme for porringer? 9-2192
 What Might Have Been, 11-2746
 What the Stars Have Seen, 11-2745
 What was he doing, the great god Pan, 7-1799
 What's he that wishes so? 11-2933
 When all the world is young, lad, 13-3404
 When Britain first, at Heaven's command, 2-548
 When cats run home and light is come, 18-4772
 When children are playing alone on the green, 3-714
 When daffodils begin to peer, 18-4654
 When Eve had led her lord away, 11-2746
 When Freedom from her mountain height, 8-1928
 When God who is forever free, 22-5821
 When good King Arthur ruled this land, in color, 6-1580
 When I awake I am still with thee, 22-5898
 When I consider how my light is spent, 23-5985
 When I was a bachelor, 11-2747
 When I was a beggarly boy, 19-4978
 When I was a little boy, 4-886
 When I'm grown up, 10-2656
 When I'm put to bed to-day, 13-3478
 When icicles hang by the wall, 11-2929
 When in the morning we arise, 9-2370
 When Letty had scarce pass'd her third glad year, 7-1765
 When little Fred was called to bed, 8-2134
 When little Sammy Soapsuds, 5-1158
 When Mummy's away, 10-2656
 When on my day of life the night is falling, 14-3699
 When summer comes, 18-4648
 When the British warrior queen, 2-478
 When the call is sounded, 22-5732
 When the dumb hour clothed in black, 9-2239
 When the green woods laugh with the voice of joy, 13-3316
 When the humid shadows hover, 21-5502
 When the Norn Mother saw the whirlwind hour, 10-2663
 When the snow is on the ground, in color, 17-4339
 When the voices of children are heard on the green, 7-1874
 When thou com'st with reddening dawn, 22-5823
 When 'tis pouring fast with rain, 18-4778
 When you see that flag of beauty, 22-5732
 Where are you going to, my pretty maid? with music, 5-1158
 Where did you come from, baby dear? 3-548
 Where do you come from, river sweet? 11-2820
 Where have you been, my boy Tammie? 18-4721
 Where is the true man's fatherland? 4-826
 Where the bee sucks, there suck I, 2-331; 21-5588
 Where the pools are bright and deep, 3-713

INDEX OF POETRY

- Where, where will be the birds that sing, 21-5500
Whereas by you I have been driven, 13-3433
Which I wish to remark, 8-1575
Which is the weakest thing of all, 14-3700
While We May, 19-4898
White Hart, with music, 15-3872
Whither? 24-6303
Whither, midst falling dew, 11-2820
Whiting, W.
Eternal Father, strong to save, 19-4896
Whitman, Walt
O Captain! my Captain! 8-2023
Whittier, John Greenleaf
At Last, 14-3699
Barbara Fritchie, 19-4895
Barefoot Boy, 8-2240, 14-3699
Extracts from, 11-2878, 2880
Maud Müller, 13-3315
My Playmate, 19-4976
Red River voyageur, 18-4650
Who Can This Somebody Be? 3-544
Who comes here? 4-827
Who fed me from her gentle breast, 4-824
Who is Sylvia? What is she, 14-3791, 21-5588
Who Killed Cock Robin? 10-2452
Who rides there so late through the night—dark
and dread, 24-6304
Who would true valor see? 8-2023
Whose dwelling is the light of setting suns,
12-3233
Why do you laugh, little brook, 19-4899
Why hurry, little river, 20-5389
Why is Pussy in bed? 19-4900
Why It Was Cold in May, 21-5501
"Why sitt'st thou by that ruined wall," 21-5498
Why so pale and wan, fond lover? 23-5984
Why the Robin's Breast is Red, 15-3990
Why weep ye by the tide, ladie? 7-1874
Widmer, Leonard
Swiss National Hymn, 22-5823
Wie Nierlansch, 22-5820
Wilcox, Ella Wheeler
Babyland, 6-1513
My Ships, 7-1798
Wishing, 8-2132
Wild Rose, 24-6303
Wild was the night, yet a wilder night, 9-2307
Will you walk into my parlor? 14-3601
William the Conqueror, 13-3101
Willie's Lodger, 11-2746
Willy boy, Willy boy, where are you going? in
color, 17-4339
Wind and the Moon, 12-3178
Wind-flowers sway, 11-2880
Wind in a Krolie, 2-371
Winter, 23-5985
Winter Song, 11-2929
Winter Wind, 11-2929
Wise Sayings from Shakespeare, 11-2935
Wish, 4-926
Wishing, by Ella Wheeler Wilcox, 8-2132
Wishing, by William Allingham, 4-1057
With deep affection and recollection, 22-5898
With fingers weary and worn, 11-2818
With thunder shout the air is rent, 22-5822
Wither, George
Author's Resolution in a Sonnet, 23-5984
Without haste! without rest, 6-1573
Wolfe, Charles
Burial of Sir John Moore, 3-713
Woman's Shortcomings, 16-4187
Wonderful One-Hoss Shay, 19-5063
Wordsworth, William
By the Sea, 7-1873
Composed upon Westminster Bridge, 15-3992
Daffodils, 1-104
Extracts from, 11-2884; 12-3233; 18-4749;
20-5389
Fidelity, 14-3602
I Travel'd Among Unknown Men, 19-4977
Kitten and the Falling Leaves, 13-3476
London in 1802, 16-3991
Lucy, 3-712
Lucy Gray, 7-1872
Wordsworth, William
March, 8-1294
Ode on Immortality, 14-3697
Pet Lamb, 8-1925
Peter Bell: A Tale (The Flight of Peter Bell),
15-3989
Rainbow, 3-713
Reaper, 8-1574
She Was a Phantom of Delight, 13-3403
Sonnet, 23-5983
Three Years She Grew, 18-4749
To a Butterfly, 16-4065
To a Skylark, 21-5502
To the Cuckoo, 8-1927
To the Skylark, 8-2133
Work, 20-5388
Work of the Poets, 16-4338
Work! use all thy will, give all thy might,
20-5388
World, 4-826
Worm, 7-1874
Worm and footsore was the Prophet, 20-5159
Wotton, Sir Henry
Character of a Happy Life, 16-4065
Wreck of the Hesperus, 1-105
Wyken, Blynken, and Nod, 1-100
- Y
- Yankee Doodle, 22-5818
Ye mariners of England, 3-715
Ye sons of France, awake to glory, 18-4772
Yet God be praised! the Pilgrim said, 11-2878
You are going out to sea to-day, 17-4422
"You are old, Father William," the young man
cried, 3-546
You know we French stormed Ratisbon, 15-3992
You see, merry Phyllis, that dear little maid,
13-3477
You shall have an apple, 8-2134
You spotted snakes, with double tongue, 11-2929
Young and old, 13-3404
Young lambs to sell, 4-827
Young Lochinvar, 18-4771
Young Mouse, 4-924
Young Russia, hail, victorious, 22-5821
Young Sophy leads a life without alloy, 6-1513
- SONGS WITH MUSIC
- Baa, baa, black sheep, 7-1802
Bees, 15-3996
Bogie Man, 18-4722
Child's Evening Prayer, 13-3478
Cuckoo and the Jackans, 14-3795
Curly Locks, 6-1582
Dance a Baby, 8-2134
Ding, dong, bell, 10-2514
Frog he would a-wooing go, 6-1514
Girls and boys come out to play, 4-1060
Goosey, Goosey Gander, 9-2305
Hickory, dickory, dock, in color, 3-face 717
Hush-a-bye, baby, in color, 21-face 5637
I love sixpence, 10-2453
I saw three ships, in color 9-2192
Jack and Jill, 20-5268
Ladybird, Fly, 12-3040
Lavender's Blue, 19-4981
Little Bingo, 11-2748
Little Bo-peep, 5-1233
Little Jack Horner, 4-986
M. N. O., 15-3317
O Dear, what can the matter be? 22-5901
Old King Cole, 10-4901
Old woman tossed up in a blanket, 7-1724
See-saw, Margery Daw, 4-827
Sing a Song of Sixpence, 3-716
Three blind mice, 4-929
What are little boys made of? 20-5162
Where are you going to, my pretty maid?
6-1158
White Hart, 15-3872

